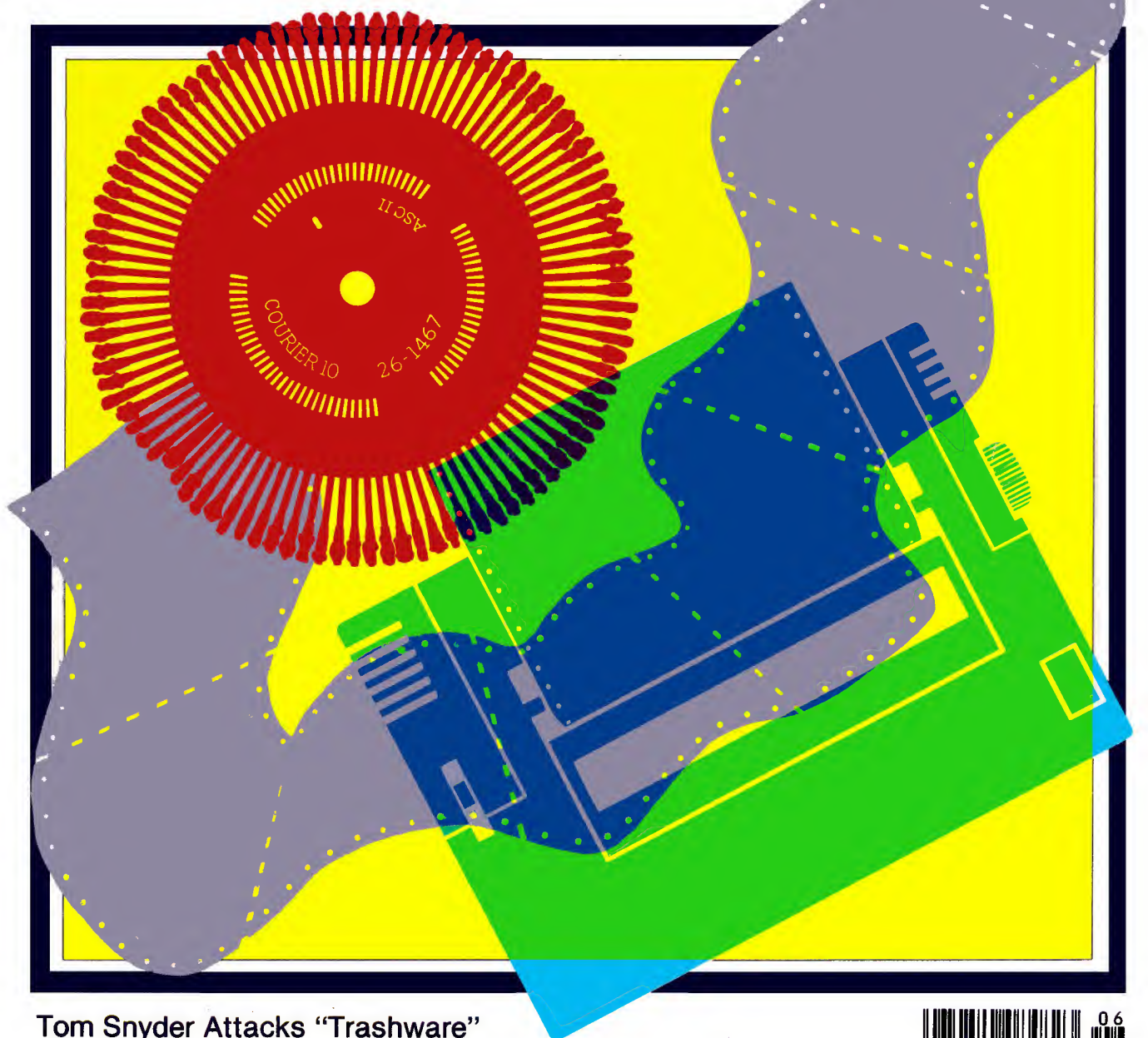


Cin **Cider**

Green's Apple Magazine

25 Low-Cost Daisy Wheel Printers: How to Buy the Right One



Tom Snyder Attacks "Trashware"
Ultima III: New Hope for the Dead
Scout Search: Don't Feed the Bears!

*Apple® is a registered trademark of Apple Computer Inc.



IF YOU'RE LIKE MOST BUY A SINGLE



YOU'LL BUY LOTS OF SPINNAKER GAMES.

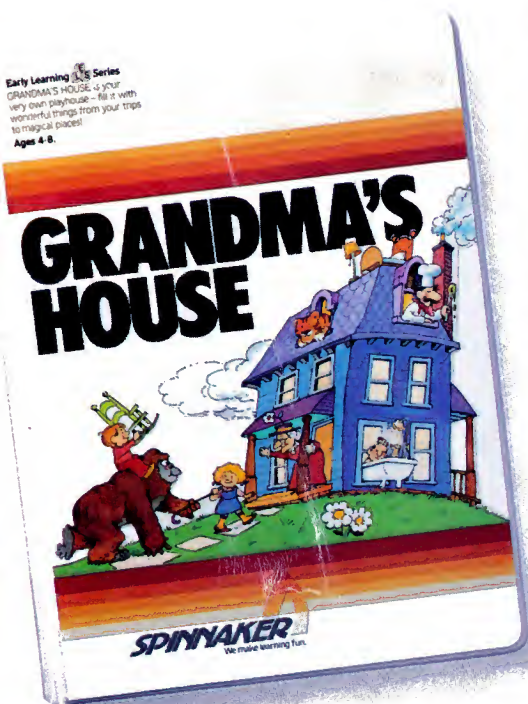
And not just because they're educational, but also because they happen to be a lot of fun to play.

In fact, they're so much fun, parents have been known to sneak in a few hours of play when the kids are asleep.

After all, if your kids are actually enjoying a learning game, there must be something to it. And there is: Fun, excitement and real educational value. That's what sets Spinnaker games apart from all the rest. And what brings parents back for more.

We offer a wide range of learning games for a wide range of age groups: 3 to 14. One look at these two pages will show you how we carefully designed our line of learning games to grow right along with your child.

So if you're looking for a line of learning games that are as much fun to play as they are to buy, consider Spinnaker Games. They're compatible with **Apple, Atari, IBM PC, PCjr, Commodore 64, Coleco Adam** and parents who don't mind their kids having fun while they learn.



It's new! GRANDMA'S HOUSE™ is a magical playhouse.
Ages 4 to 8.

GRANDMA'S HOUSE is a very special place for your kids, because they can furnish it with lots of wonderful and unusual things from the magical places they'll visit.

GRANDMA'S HOUSE provides children with an imaginative way to exercise their creativity as they design their own perfect playhouse. You'll love watching your kids have fun with GRANDMA'S HOUSE—you can even join in and play it with them!



It's new! KIDWRITER™ lets kids make their own storybook.
Ages 6 to 10.

KIDWRITER gives children a unique new format for creating their own stories. With KIDWRITER, kids make colorful scenes, then add their own story lines. It's as versatile and exciting as your child's imagination!

Best of all, while it encourages children to create word and picture stories, it also introduces them to the fundamentals of word processing. KIDWRITER will bring out the storyteller in your children—and in you!



PARENTS, YOU WON'T SPINNAKER GAME.



FRACTION FEVER™ brings fractions into play.
Ages 7 to Adult.

FRACTION FEVER is a fast-paced arcade game that challenges a child's understanding of fractions. As kids race across the screen in search of the assigned fraction, they're actually learning what a fraction is and about relationships between fractions.

All in all, FRACTION FEVER encourages kids to learn as much as they can about fractions—just for the fun of it!



KINDERCOMP™ Numbers, shapes, letters, words and drawings make fun.
Ages 3 to 8.

KINDERCOMP allows very young children to start learning on the computer. It lets your children match shapes and letters, write their names, draw pictures and fill in missing numbers. KINDERCOMP delights kids with colorful rewards—the screen comes to life when correct answers are given.

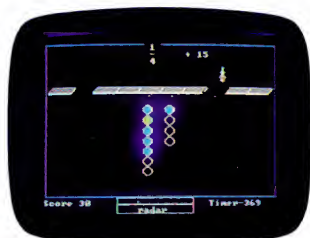
As a parent, you can enjoy the fact that your children are having fun while improving their reading readiness and counting skills.



FACEMAKER™ makes faces fun.
Ages 3 to 8.

FACEMAKER lets children create their own funny faces on the screen, then make them do all kinds of neat things: wink, smile, wiggle their ears, and more.

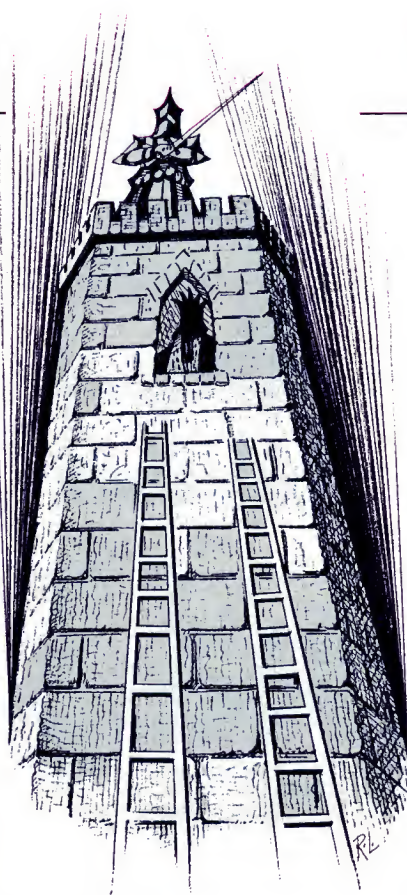
Plus, FACEMAKER helps familiarize children with such computer fundamentals as menus, cursors, simple programs, and graphics. FACEMAKER won't make parents frown because their children will have fun making friends with the computer.



SPINNAKER™
We make learning fun.

Circle 303 on Reader Service card.

Disks for: Apple, Atari, IBM PC and PCjr, Commodore 64.
Cartridges for: Atari, IBM PCjr, Commodore 64, Coleco Adam.



Chivalry review, p. 125

The Exodus: Ultima III Character Editor, p. 58



ARTICLES

Stalking the Low-Cost Daisywheel Printer **28**

We tell you all you need to know to buy a letter-quality printer for under \$1000.

by Roger Hart



Apple Writer Patchwork **36**

You can control your Okidata printer with your Apple Writer II word processor to get boldface, underlining, and other features.

by Nadine L. Keilholz

The Exodus: Ultima III Character Editor **58**

Your fantasy characters can achieve immortality, untold riches, and immense strength. We're working on a similar program for the real world.

by Kerry Lantz

Scout Search **68**

Earn your Bear badge in this game. Can you get the little troopers home before the wild animals eat them?

by John Romero

Using a Versatile Interface Adapter with Your Apple **72**

The stepper motor interface described in last October's issue has to be programmed. If you were stumped, here's how.

by Jerry Faughn

Tom Snyder: Interview **42**

The father of Spinnaker Software talks about his radical views on educational programs.

by Brian Murphy

Printing Multiple Files with DIABLOPRT **77**

This installment completes the free Apple Pascal word processor presented in last month's issue.

by James R. Florini

inCider's inSidious inSolubles **51**

Double the puzzles this month—the Text File and the Hi-Res Viewer.

by Art Ude

The Compleat Text File Primer: Part 4—The Text File **88**

Meet the text file! You may be surprised at its subtleties.

by Lee Swoboda

Variance Analysis Revealed **53**

With this VisiCalc technique you can compare your operating expenses against your budget to see how well your business is actually doing.

by Trish McClelland

Cover art by Holly Fuetter.



June 1984
Vol. 2, No. 6

Scout Search, p. 68

DEPARTMENTS

Fermentations	6
Letters	8
Fudge It!	13
Mirror, Mirror... and Memory Management	
The Applesoft Adviser	22
On Nonstandard Basic and Other Things	
Calendar	103
Bent on Business	104
Breakin' It Down	
III's Company	106
The Apple III—Great Company!	
The Apple Clinic	108
Double Seven Loses; Printer Code Blues; Sound Off	
Hints 'n' Techniques	110
Beating Fre (0) with HIMEM; BLOOD Spec-Finder	
Book Reviews	113
Apple II Applications; Learning with Logo; The Apple House; The Apple II Circuit Description	
Hardware Reviews	118
Juki 6100 Printer; Smith-Corona L-1000 Printer; Silver-Reed EXP 500 Printer; Voice-Based Learning System	
Software Reviews	124
Caverns of Callisto; Gruds in Space; Chivalry; Magic Memory; The Graphics Magician; Speed Reader II; In Search of the Most Amazing Thing; Gutenberg; DiskQuik; Work Force II; Microzine; TermExec Version 1.2; BPI Accounts Receivable	
New Publications	145
New Software	146
New Products	154

inCider is a member of the CW Communications/Inc. group, the world's largest publisher of computer-related information. The group publishes 52 computer publications in 19 major countries. Nine million people read one or more of the group's publications each month. Members of the group include: Argentina's *Computerworld/Argentina*; Australia's *Australia Computerworld*, *Australian Micro Computer Magazine*, *Australian PC World* and *Directories*; Brazil's *DataNews* and *MicroMundo*; China's *China Computerworld*; Denmark's *Computerworld/Danmark* and *Micro-Verden*; Finland's *Mikro*; France's *Le Monde Informatique*, *Golden* (Apple) and *OPC* (IBM); Germany's *Computerwoche*, *Microcomputerwelt*, *PC Welt*, *Software Markt*, *CW Edition/Seminar*, *Computer Business* and *Commodore Magazine*; Italy's *Computerworld Italia*; Japan's *Computerworld Japan* and *Perso ComWorld*; Mexico's *Computerworld/Mexico* and *CompuMundo*; Netherland's *CW Benelux* and *Micro/Info*; Norway's *Computerworld Norge* and *MikroData*; Saudi Arabia's *Saudi Computerworld*; Singapore's *The Asian Computerworld*; Spain's *Computerworld/Espana* and *MicroSistemas*; Sweden's *ComputerSweden*, *MikroDatorn* and *Min Hemdator*; the UK's *Computer Management* and *Computer Business Europe*; the U.S.' *Computerworld*, *HOT CoCo*, *inCider*, *InfoWorld*, jr., *MacWorld*, *MICRO MARKETWORLD*, *Microcomputing*, *PC World*, *PC Jr. World*, *RUN*, *73 Magazine*, and *80 Micro*.

inCider (ISSN #0740-0101) is published monthly by Wayne Green Publications Group, 80 Pine St., Peterborough, NH 03458. Phone: 603-924-9471. Second class postage pending at Peterborough, NH, and additional mailing offices. Subscription rates in U.S. are \$25 for one year and \$53 for three years. In Canada and Mexico, \$27.97—one year only, U.S. funds drawn on a U.S. bank. Nationally distributed by International Circulation Distributors. Foreign subscriptions (surface mail), \$44.97—one year only, U.S. funds drawn on a U.S. bank. Foreign subscriptions (air mail), please inquire. In South Africa contact *inCider*, PO Box 782815, Sandton, South Africa 2146. All U.S. and Canadian subscription correspondence should be addressed to *inCider*, Subscription Department, PO Box 911, Farmingdale, NY 11737. Please include your address label with any correspondence. Postmaster: Send address changes to *inCider*, Subscription Services, PO Box 911, Farmingdale, NY 11737. Entire contents copyright 1984 by Wayne Green Publications Group.

inCider editorial offices
80 Pine Street
Peterborough, NH 03458
603-924-9471

EDITOR-IN-CHIEF
Paul C. Quinn

MANAGING EDITOR
Peg LePage

TECHNICAL EDITOR
Robert M. Ryan

EDUCATION EDITOR
Joan Witham

REVIEW EDITOR
Kerry J. Lanz

COPY EDITOR
Melody Bedell

ASSISTANT EDITOR
Cynthia K. Carr

EDITORIAL DESIGNER
Judy Oliver

LAYOUT EDITOR
Phyllis Pittet

PROOFREADERS
Peter Bjornsen, Harold Bjornsen,
Robin Florence

EDITORIAL DIRECTOR
CW Communications/Peterborough
Jeff DeTray

PRODUCTION
Nancy Salmon, Director; Susan Gross, Assistant
Production Manager/Manufacturing; Lahri Bond,
Cindy Boucher, Sandra Dukette, Star Kachadoorian,
Marlene Mowbray, Lynn Simonson, Ken Sutcliffe
Ad Coordinators: Paula Ramsey, Patricia Bradley,
Jean Southworth
Advertising Production: Bruce Hedin
FILM PRODUCTION
Donna Hartwell, Laurie Jennison, Robert Villeneuve,
Leslie Walden
PHOTOGRAPHY
Nathaniel Haynes, Supervisor; Laurie Gardos,
Carol Lake, Jean Quickmire, Sturdy Thomas
TYPESETTING
Dennis Christensen, Manager; Darlene Bailey,
Marie Barker, Prem Congaj, Lynn Haines,
Cynthia Letourneau, Kimberly Nadeau, Debbie Nutting,
Lindy Palmisano, Heidi N. Thomas
COPYWRITING
Steve Tripp, Chief
DESIGN
Christine Destremes, Creative Director;
Joyce Pillarella, Design Manager;
Holly Fuelle, *inCider* Magazine Design Consultant;
Sue Donohoe, January Folsom, Patrice Scribner,
Sara Werninger, Administrative Assistants

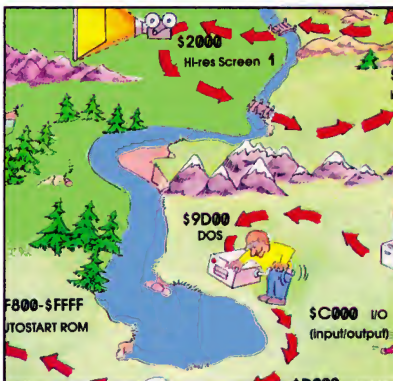
MPA

Submissions: We're always looking for first-class manuscripts at *inCider*. We'll consider publication of any material for the Apple. Guidelines for budding authors are available—just address an envelope to yourself and include it with your request. Mail manuscripts or requests for writers' guides to: *inCider* Editorial Offices, 80 Pine St., Peterborough, NH 03458.

Tom Snyder: Interview, p. 42



Fudge It!, p. 13



PUBLISHER/PRESIDENT
Wayne Green
VICE PRESIDENT/GENERAL MANAGER
Debra Wetherbee
VICE PRESIDENT/FINANCE
Roger Murphy
ASSISTANT TO PRESIDENT/VP
Matt Smith
ASSISTANT TO VP/FINANCE
Dominique Smith
DIRECTOR OF MARKETING AND SALES
David Schissler
CIRCULATION DIRECTOR
William P. Howard
603-924-9471
ASSISTANT CIRCULATION MANAGER
Frank S. Smith
RETAIL & NEWSSTAND SALES MANAGER
Ginnie Boudrieau
800-343-0728
MARKETING & RESEARCH MANAGER
Wendie Haines
ADVERTISING
Stephen Twombly, Director;
Renny Weiss, Manager; Paul Boule;
Michele Gilmore, Ad Coordinator.
PUBLIC RELATIONS
Jim Leonard

inCider magazine is published monthly by Wayne Green Publications Group. Entire contents copyright 1984 Wayne Green Publications Group. No part of this publication may be reprinted, or reproduced by any means, without prior written permission from the publisher. All programs are published for personal use only. All rights reserved.

Problems with Advertisers: Send a description of the problem and your current address to *inCider*, Rt. 101 & Elm Street, Peterborough, NH 03458, Attn. Rita Rivard, Customer Service Manager. If urgent, call 1-800-441-4403.

Problems with Subscriptions: Send a description of the problem and your current and/or most recent address to: *inCider*, Subscription Department, PO Box 911, Farmingdale, NY 11737.

Change of Address: Send an old label or a copy of your old address and new address to: *inCider*, PO Box 911, Farmingdale, NY 11737. Please give eight weeks' advance notice.

Microfilm: This publication is available in microform from University Microfilms International. United States address: 300 North Zeeb Road, Dept. P.R., Ann Arbor, MI 48106. Foreign address: 18 Bedford Row, Dept. P.R., London, WC1R4EJ, England.

Dealers: Contact Ginnie Boudrieau, Bulk Sales Manager, *inCider*, Pine Street, Peterborough, NH 03458. Call 1-800-343-0728.

Back Issues: Send \$3.50, plus \$1.00 postage, for each copy to *inCider*, Back Issues Dept., Route 101 and Elm St., Peterborough, NH 03458. For ten or more copies postage is a blanket \$7.50. To order by telephone using VISA, MasterCard or American Express call 1-800-258-5473 from outside New Hampshire, or 924-9471, ext. 136, within New Hampshire.

Fermentations

by Bob Ryan
inCider staff

What's in Store for Software?

If Adam Osborne is right, the way you and I buy software will change radically in the next few years. At this year's West Coast Computer Faire Osborne outlined plans for Paperback Software International, his latest commercial venture. Osborne thinks that microcomputer software is about to become a mass market commodity, and he wants to be in a position to profit from this development.

In Osborne's view, the dilemma facing the software industry is that while the market for software is growing by a factor of ten every few years, the companies selling in that market are having a hard time making a profit. Osborne believes that the current problems in the software industry do not stem from lack of capital but from the way software is sold. "Delivery is the problem," he said, and called the current practice of pricing and distribution "a death wish upon the industry."

Osborne believes that the industry, which he insists is still in its infancy, won't take off until retailers can make a profit selling software. He stated that, as things stand now, a computer store nets very little on a software package that sells for less than \$1000. In these cases, the retailer's margin is eaten up by the cost of paying people to demonstrate and support the product. Osborne's solution is to change the software distribution channel.

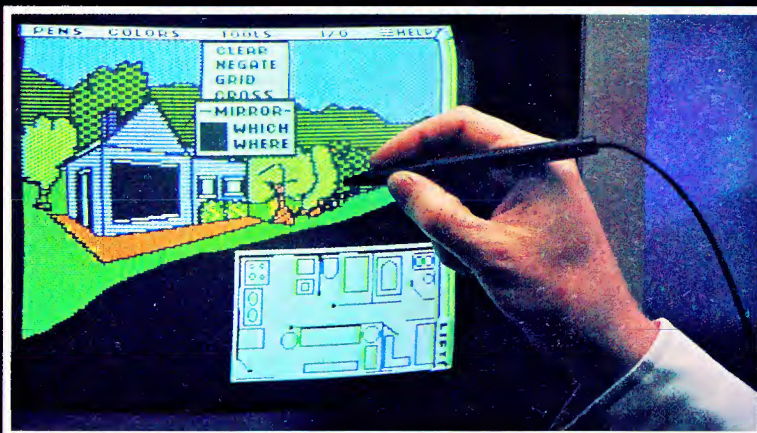
"Non-game software belongs to book shops," Osborne succinctly stated. In this mass market approach, retailers will provide no support for the software; the manufacturer will have that responsibility. With centralized support and the economies of scale, Osborne expects software that currently retails in the \$200-\$500 range to sell for \$30-\$80.

Of course, software companies are not structured to distribute and compete on a mass market scale. As Osborne puts it, "an amazing lack of imagination has gone into the development of software companies." In reaction to this, Osborne formed Paperback Software International. PSI will not develop software. Instead, it will provide financial resources, marketing expertise, and a distribution channel to a number of software development companies. PSI has already signed three companies and Osborne expects to have eventually about 30 companies use PSI for marketing and distribution.

Time will tell if Osborne's conception of the software industry is correct, but it is interesting to note that he is not alone in recognizing the potential of the mass market. Sandy Ruby and Bob Shapiro of Micro Software International, the developers of PractiCalc, are also pursuing the mass market. Their product, which incorporates the features of spreadsheets retailing for hundreds of dollars, is being sold in mass market outlets for less than \$70. It appears that the future that Osborne envisions is already upon us.

Although the emphasis of his talk at the Faire was oriented toward the future, Osborne did have a few things to say about his recent past. He was not apologetic when discussing Osborne Computer Corporation, and he expressed confidence that Paperback Software International would not suffer the fate of OCC. As he put it, "Nothing like that will ever happen again." Osborne also had another message, namely that "ours is an industry that got to where it is because people take chances. When they fail, they get up and do it [take chances] again." And that's just what he intends to do. ■

Now... Draw On Your Imagination



Introducing The Gibson Light Pen System.™

The link between mind and machine has arrived. Suddenly you're free...free to translate your every thought into professional quality computer graphics... just by touching your screen.

The Gibson Light Pen System software features *icon* menus that offer easy access to powerful graphics tools such as symbol libraries, geometric shapes, mirror-imaging, magnification and complete color and pattern editing. Even if you're not a graphic artist, you can design, diagram and draw with precision at high-speed, in high-resolution, and in full-color...right on your screen.

COMPLETE WITH FIVE SOFTWARE SYSTEMS TO MAXIMIZE YOUR CREATIVE OPTIONS.

The Gibson Light Pen System comes complete with all you need to draw, paint, design, score music and learn animation.

DRAW FREEHAND WITH PENPAINTER.™

A full range of drawing tools, shapes, patterns and colors to draw or paint virtually anything on your screen.

DESIGN PRECISION DIAGRAMS WITH PENDESIGNER.™

Turn your computer into your own graphic design studio. A complete selection of templates make perfect business and architectural diagrams, technical drawings and engineering schematics a snap.

CREATE COMPUTERIZED ANIMATION WITH PENANIMATOR.™

All that you need to learn the basics of animation. Develop your own animation sequences, and bring your screen to life.

COMPOSE MUSIC WITH PENMUSICIAN.™

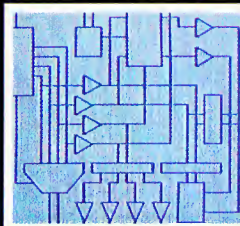
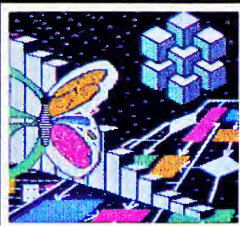
Score computerized melodies with incredible ease at the touch of your pen.

CREATE YOUR OWN LIGHT PEN APPLICATIONS WITH THE PENTRAK LANGUAGE SYSTEM.™

Take advantage of the software features, and customize your own light pen programs.

NOW AVAILABLE FOR THE APPLE II® SERIES

Coming soon for the IBM PC™ and PCjr.™



Circle 315 on Reader Service card.



Koala Technologies
800-KOA-BEAR

The Gibson Light Pen System

Touch the Magic of Light

Letters

Eastern's Covering Itself

Eastern Airlines' prohibition on use of portable computers indicates that they are more familiar with Federal Aviation regulations than you are. I am certain you know of Part 91.19. It states that, except for certain conditions, "No person may operate, nor may the operator or pilot in command of an aircraft allow the operation of, any portable electronic device. . . ." The certain conditions excepted are:

1. portable voice recorders
2. hearing aids
3. heart pacemakers
4. electric shavers
5. any other portable electronic device that the operator of the aircraft has determined *will not* cause interference with the navigation or communication system of the aircraft on which it is to be used.

"Operator" in item number five refers, in this case, to Eastern Airlines. The operator is defined as responsible for determining the device will not cause interference. The operator is therefore charged with proving that under no circumstances whatsoever will the device in question cause interference. Charged with that responsibility, I doubt that I would allow any device to be operated on my aircraft. If anything happened which could be related to the operation of an electronic device, the airline would be found in violation of FAR's. At this time, it's just plain safer, legally and literally, for the airlines to prohibit the use of such devices.

This does not mean it has to stay that way. It would seem appropriate to change the federal regulation to permit operation of "approved" electronic devices in flight. It would seem that it would be possible for the FAA to determine which emissions are a problem and publish those determinations. This would allow manufacturers to test their equipment against a standard and, subject to FAA approval, advertise their products as acceptable for use on commercial aircraft.

Probably this is easier said than done. One fact standing in the way is

the increased use of onboard computers used to fly the aircraft and the potential for intentional or unintentional interference by a "kneetop computer" user like yourself.

At any rate, it seems to be a topic of the times, but I don't think it's appropriate to blame Eastern for protecting themselves. I hope you see my point.

Mark L. Hunnibell
PSC 1 Box 4371
APO SF 96286

Tsk, tsk, Mark, I did my homework before writing, so I'm well aware of the regulations. But I have a big problem with the herd instinct—the obeying of rules which are not reasonable—the wearing of designer jeans—Monday night football. So when there's a screw loose somewhere you'll often find me rattling a cage to get it fixed.

My editorial had exactly the effect I aimed for, despite some pot shots from the herd. It made the Washington Post and that, in turn, sparked the needed official tests. The result was that briefcase computers were given a clean bill of health and Eastern rescinded their ban on them.

Before writing my editorial I already knew the FAA rules—having been a pilot myself a few years back—and having had to come to grips with them when I got interested in ham repeaters 15 years ago, when I often operated my hand transceiver from commercial airliners with the permission of the caption.

Having checked out the radiation of several briefcase computers before writing, I knew what the results of an official test would be and that it would permit the use of these computers on commercial flights. Remember that I'm also the editor and publisher of a communications magazine, so I'm on home ground with radio frequencies. Been playing with 'em for almost fifty years now.

These briefcase computers are an enormous boon to traveling businessmen, so any gratuitous restrictions on their use should be fought. My NEC goes with me almost everywhere these days, speeding up my writing

and making me far more efficient in communicating.

One other thing—part of the New Hampshire constitution calls for its citizens to fight any law they think is wrong. And on our license plates it says, "Live Free Or Die." Many of us take that seriously and refuse the herd mentality of obeying laws whether they are right or not. And that, Mark, is a key to progress.

—Wayne

PeachCalc Correction

On page 144 of the February 1984 *inCider*, PeachCalc, Peachtree's electronic spreadsheet, is priced at \$395 for a specific DOS version and is part of "Peachpak 4." This is incorrect. PeachCalc carries a suggested retail price of \$150 for both the 8-bit and 16-bit versions. Peachpak 4 is an integrated accounting package, in which PeachCalc plays no part. PeachCalc is a component of PeachText 5000, a series of integrated products for business and personal use, but this has no relation to the Peachpak 4 system.

Genie Ragin
Peachtree Software, Inc.
3445 Peachtree Road, N.E.
8th Floor
Atlanta, GA 30326

We apologize for any confusion this may have caused. We do our best to ensure the accuracy of our product information, but occasionally we slip up. Please correct us if we make mistakes!

—eds.

Who Needs 16 Bits?

The "Fermentations" column of *inCider's* January 1984 issue contained a quote (by Alexander Stein of Dataquest Inc.) which suggested that integrated software requires the high clock rate found only in 16-bit machines.

Not true! Apple has just introduced AppleWorks, a powerful integrated software package for the Apple IIe. AppleWorks combines word processing, database management, and spreadsheet analysis in a tightly

Don't let price get in the way of owning a quality printer.

Adding a printer to your computer makes sense. But deciding which printer to add can be tricky. Do you settle for a printer with limited functions and an inexpensive price tag or buy a more versatile printer that costs more than your computer? Neither choice makes sense.

Here's a refreshing option—the new, compact STX-80 printer from Star Micronics. It's the under \$200 printer that's whisper-quiet, prints 60 cps and is ready to run with most popular personal computers.

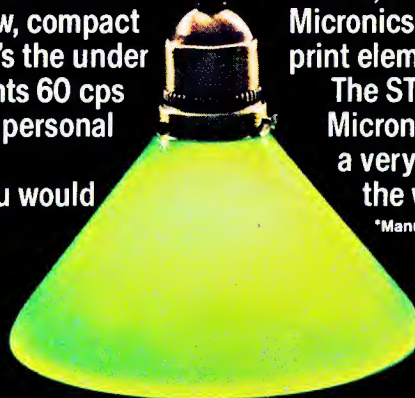
The STX-80 has deluxe features you would

expect in higher priced models. It prints a full 80 columns of crisp, attractive characters with true descenders, foreign language characters and special symbols. It offers both finely detailed dot-addressable graphics and block graphics.

And, of course, the STX-80 comes with Star Micronics' 180 day warranty (90 days on the print element).

The STX-80 thermal printer from Star Micronics. It combines high performance with a very low price. So now, there is nothing in the way of owning a quality printer.

*Manufacturer's suggested retail price.



**Now with more
computer connections.**



Circle 193 on Reader Service card.

star
MICRONICS • INC

THE POWER BEHIND THE PRINTED WORD.

Computer Peripherals Division
P.O. Box 612186, Dallas/Ft. Worth Airport, TX 75261 (214) 456-0052

The new STX-80 printer for only \$199.*

integrated design. Moreover, it is written under Apple's new ProDOS operating system for fast, efficient operation. This means that AppleWorks can utilize the ProFile for faster data access and larger files.

The integrated design of AppleWorks features consistent commands and user interface throughout the program, making it easy to learn and use. You can keep up to 12 files in memory at one time and switch among them in seconds. In addition, you can cut and paste using the AppleWorks clipboard to produce your final document.

Finally, please note that other companies have also introduced integrated software for the Apple IIe. It appears that the quality of software for the Apple II family products will continue to improve as developers take full advantage of the computers' powerful features.

Don Field
AppleWorks Product Manager
Apple Computer Inc.

inCider will publish a review of AppleWorks in its July issue. Watch for it!
—eds.

Bar Codes Worth the Price

I support the bar code program listings option as discussed in a letter in the March issue. Several of my friends and I have been toiling to type in the code listing for the Presidential Power game given in the same issue. Even with two people, one reading out the listing and the other typing, the process is extremely time-consuming.

Few people who own Apple computers have the spare time to type in such long programs, yet longer programs are much more useful and effective than shorter ones. In general, someone who has invested \$2000-\$3000 in a system would be willing to spend another \$100 for a monthly subscription to new software.

Hal Hancock
2604 Bois Darc
Duncan, OK 73533

One of *inCider's* services is providing readers with buying information from the many mail order concerns catering to the Apple market. Often, our readers will go out of their way to write and tell us of the excellent service they received when dealing with a vendor, citing such things as prompt delivery and no-fuss back-up service. That isn't always the case, however, and when problems do arise it's nice to know where you stand legally.

In 1975, the Federal Trade Commission passed the Mail Order Rule to protect consumers from mail order fraud. Below are some of the Rule's highlights.

If you've sent in payment with your order, you must receive your purchase when the vendor promised it. If the vendor has not specifically stated a delivery date, then it must be shipped no later than 30 days after receipt of your order. If you don't get your order shortly after the 30 days, you can cancel and get your money back.

A vendor must notify you of delays beyond the promised delivery date (or the 30-day limit), as well as when the merchandise *can* be shipped, and give you the option of either cancelling your order for a full refund or waiting for the new shipping date. Further, the vendor must provide you with a free way to respond, as by a stamped card or envelope. (Note: if you don't respond, it means you accept the delay.)

When you cancel a prepaid order (unless you paid via credit card), the vendor must mail you a refund within seven business days. If there is a refund delay, the company must obtain your express consent.

If you cancel a mail order charged on your credit card, the vendor must credit your account within one billing cycle after receipt of your request. This rule does not apply to mail order photo

finishing, seeds and plants, magazine subscriptions and other deliveries in a series (except for the initial shipment), C.O.D. orders, and credit orders when you do not pay before the company mails the merchandise. Also, the rule does not generally apply if you order an item by phone, as when using a vendor's toll-free (800) number.

So, if you have a problem, what should you do? First, contact the mail-order company. Be ready to supply them with all pertinent information such as your order number, check number, order date and the exact name you used when ordering. You'll make solving potential problems much easier if you keep records of all this information from the beginning.

If you've contacted the company and still aren't satisfied, get in touch with the following organizations. (Again, it's very helpful to keep a log of all communications.)

- Your local or state consumer protection office or Better Business Bureau.
- The consumer protection agency nearest the vendor.
- Your local postmaster. (Ask for the name and address of the appropriate postal inspector in charge.)
- The book, magazine or newspaper publisher whose publication carried the original advertisement.
- The Direct Mail/Marketing Association, Mail Order Action Line, 6 East 43rd St., New York, NY 10017.

If you're now having problems with one of *inCider's* advertisers, by all means, write to us right away. Address your complaint to Rita Rivard, *inCider*, Route 101 and Elm Street, Peterborough, NH 03458.

We'll do our level best to straighten the matter out.

—the editors

KEY TRONIC POLISHES THE APPLE II* KEYBOARD



Eleven Function Keys
Streamline Multiple
Key Operations

Full Shifting Capability

Keys in Familiar
Typewriter Locations

Numeric Pad

10 Foot Cable
For Portability

Enhance your APPLE II* Computer System with a Key Tronic keyboard peripheral. This detached, low-profile keyboard is plug-compatible with the existing keyboard socket of the Apple II. It also features reliable microprocessor electronics, solid-state capacitance switches, and positive tactile feedback.

Special keyboard available for the handicapped — factory direct.

*Apple II is a registered trademark of Apple Computer, Inc.

Suggested Retail Price: \$298.00

To order Model KB-200 call Toll Free 1-800-262-6006 for the retailer closest to you. (7am-3pm Pacific Time)
Warranty information may be obtained by writing to the address below.



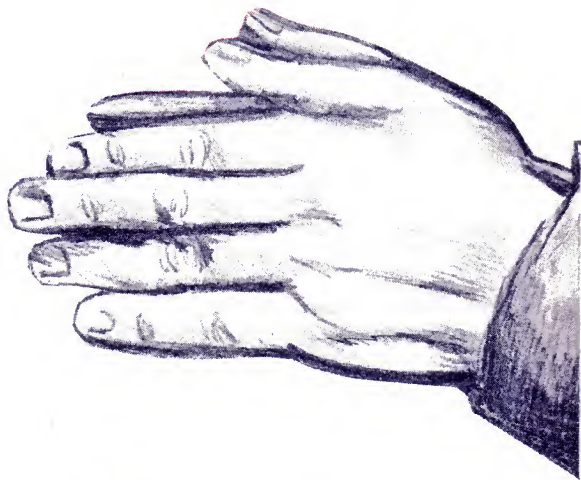
THE RESPONSIVE KEYBOARD COMPANY

DEPT. E1 • P. O. BOX 14687 • SPOKANE, WASHINGTON 99214 USA

RETAILERS: For the Distributor in your area, call Toll Free 1-800-262-6006 Dept. D (7am-3pm Pacific Time)

APPLAUSE...

for the Latest Innovation
in Printer Technology.



MICRO-GRIP™ IV

Designed specifically for the Epson
MX-70/80 and RX-80 printers.
Only \$39.95 ea. plus shipping.

Bill Cole Enterprises proudly announces the re-birth of Micro-Grip™. Now Micro-Grip™ IV will give you the friction feed capability you've been looking for, without the high cost of buying a letter quality printer. Instead of buying a new printer to accept both tractor and friction feed, we've manufactured a new device to upgrade your old system for a fraction of the cost. Installed with just a screwdriver, Micro-Grip™ IV can be the answer to an expensive problem. Once added to your printer, Micro-Grip™ will not disturb the tractor capabilities of the machine, yet is easily removed for maintenance or repair. New modifications make adjustments easier than ever, and prevent any shifting or skewing of the paper. Micro-Grip™ IV has been designed for Epson MX-70/80, RX-80 and printers that are based on Epson design, such as the IBM PC, Commodore, and H.P. Bill Cole Enterprises is the exclusive manufacturer of Micro-Grip™ IV — all these improvements and STILL just \$39.95, plus shipping. We're confident that you'll agree with us that Micro-Grip™ IV is the best ever!

Special Note: For all owners of previous Micro-Grip™ models — Upgrade Kits are available for only \$10.95 ea. Call for details.

NOTE: Micro-Grip™ is not a substitute for a letter quality printer. It is a retrofit mechanism for the purpose of obtaining single sheet correspondence from your tractor feed printer.

THE DAWN OF A NEW ERA

But don't just applaud. Order your Micro-Grip™ today.



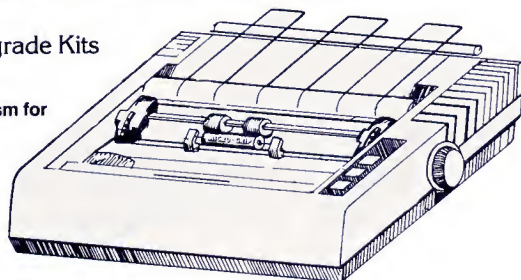
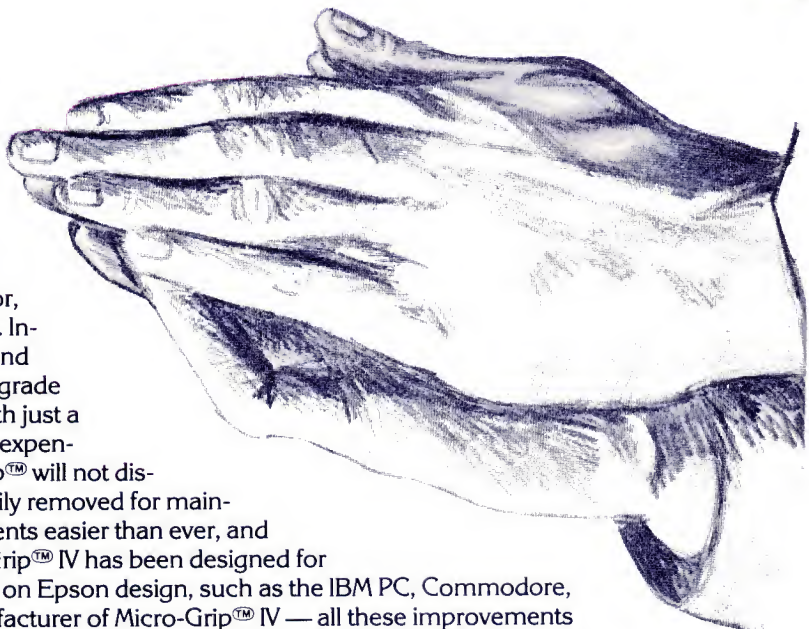
Bill Cole Enterprises, Inc.

MANUFACTURERS AND DISTRIBUTORS OF COMPUTER SUPPLIES

P.O. BOX 60 • DEPT. IN6 • WOLLASTON, MA 02170-0060 • 617-963-5510



For Credit Card Orders ONLY! Call Toll Free 1-800-225-8249



Micro-Grip™ and Micro-Grip IV™ are trademarks of Bill Cole Enterprises.

We carry a **COMPLETE** line of computer supplies.
Ask for catalog DP58.

TERMS & CONDITIONS

A minimum order of 10.00 is required, not including shipping. Prices effective 2/1/84 and are subject to change without notice. Automatic credit is extended to federal agencies, but to keep our prices competitive, we must request payment with order from all other individuals and institutions. No C.O.D. orders accepted. Freight charges added to credit card orders. All others shipped freight-collect. CASH ONLY. No merchandise may be returned without prior written authorization from this office. Merchandise ordered in error or not wanted is subject to a 25% restocking charge. Defective material replaced at no charge. All returns limited to a merchandise credit only. Mass. residents add 5% sales tax.

Fudge It!

by Don Fudge

Mirror, Mirror . . . and Memory Management

This month I present a routine for reversing vector shapes, then a discussion of memory management. I developed the vector reversing algorithm for my new Hi-Res Interior Design and Hi-Res Landscaping systems. I had hundreds of shapes in long vector shape tables and needed a method to create mirror images of them, i.e., for a right-facing chair to face left and vice versa. I could have redrawn all those shapes in reverse, but since I'd just spent a week drawing about 400 shapes, I decided to write a routine that would create the mirror images for me.

I needed a routine that would take a normal vector shape, go through it, and change it so it ended up facing the opposite way. And once I finished using the backwards shape, I needed to be able to run the very same routine and have it return the vector shape to its original orientation.

To do all this, I had to review what I already knew about vector shape

move-only and plot-and-move commands. (See Figure 1 and your *AppleSoft Manual*, pages 91-100.) It didn't take long to determine that in order to reverse a vector shape, I had to transpose every right arrow into a

But I had to figure out how to do it. Actually, it turned out to be a rather simple task, but one characterized by some intriguing code.

It's too bad that each of the commands (plot left, move right, move up, plot down, etc.) doesn't get a byte to itself. Then the algorithm would have been a real breeze to code. But in truth it's a good thing vector shape codes *are* so compact—if they weren't they'd take up too much room.

Plotting the Course

The bits in a vector shape byte all have specific functions, and each byte is divided into three parts. Refer to Figure 2. In the byte illustrated there are three plotting vectors: A, B and C. C can only be a mover, not a

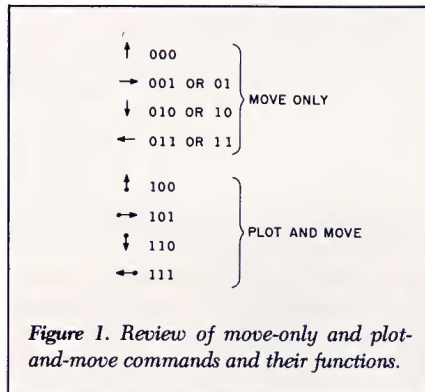
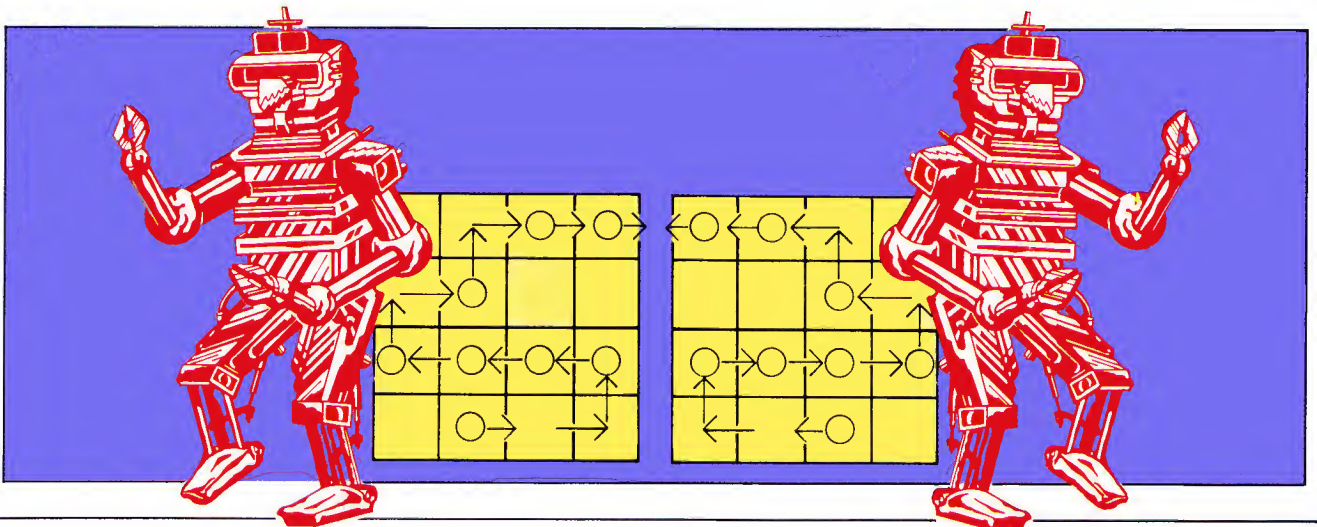


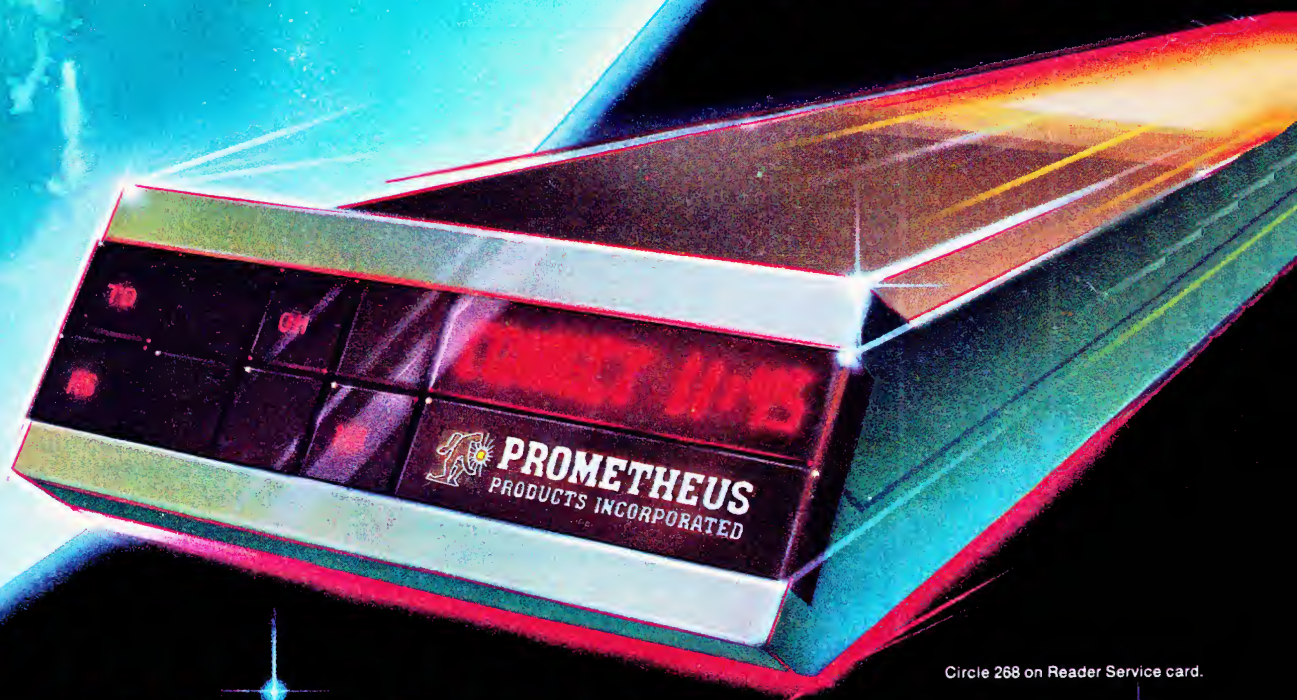
Figure 1. Review of move-only and plot-and-move commands and their functions.

left arrow and every left arrow into a right arrow. And this would apply to reversing the changes back to normal as well.

Address correspondence to Don Fudge c/o Avant-Garde Creations, PO Box 30160, Eugene, OR 97403.



PRO-MODEM 1200



Circle 268 on Reader Service card.

It's about time.

Time for your computer to make the telephone connection — with an intelligent, full 212A 300/1200 baud modem — with a real time clock/calendar — and with the capability to expand into a complete telecommunications system. It's time for PRO-MODEM 1200. Much more than just a phone modem.

When you're on-line, time is money. PRO-MODEM telecommunication systems help you save. By monitoring the duration and cost of your phone calls. And by sending and receiving messages, unattended, at preset times when the rates are lower... with or without your computer.

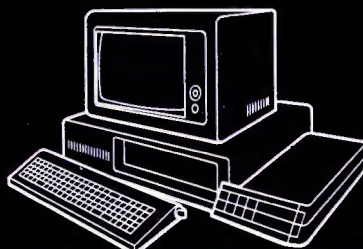
Compare the \$495 PRO-MODEM 1200 with any other modem on the market. For example, you'd have to buy both the Hayes Smartmodem 1200 plus their Chronograph for about \$950 to get a modem with time base.

PRO-MODEM 1200 is easy to use. A convenient "Help" command displays the Menu of operating command choices for quick reference whenever there's a question about what to do next. Extensive internal and remote self-diagnostics assure that the system is operating properly. Some of the other standard features include Auto Answer, Touch Tone and Pulse Dialing, and Programmable Intelligent Dialing.

PRO-MODEM does more. It lets you build a full telecommunications system with features like Auto Dialer, Incoming and Outgoing Message Buffering, Business/Personal Phone Directory, Programmable Operating Instructions, a 12-Character Alpha-Numeric Time and Message Display, and versatile PRO-COM Software. PRO-MODEM commands are Hayes compatible so you can use most existing telecommunications software without modification.

There's much more to the PRO-MODEM story. See your local dealer for complete details. He'll show you how to save time. And money.

Prometheus Products, Inc., 45277 Fremont Blvd., Fremont CA 94538, (415) 490-2370



PROMETHEUS

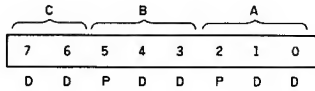


Figure 2. Representation of a vector shape byte—one byte in a shape table.

plotter, but the A and B vectors can plot as well as move. The P's mean *plot bits* and the D's mean *direction bits*. The plot designation takes only one bit per vector because plots either happen or not—on or off. But there are four directions, so in binary this requires two direction bits for every vector.

For my purposes, I wasn't interested in the plot/no-plot bits (2 and 5). I just wanted to make left into right and right into left. Well, right is 01 and left is 11, so basically what I needed to do was make all DD sets of bits (direction bit pairs) that were 01 turn into 11, and all pairs that were 11 turn into 01. It was very important, however, that I in no way change any 00 or 10 direction bit pairs. In other words, I can say that my goal was to change every pair of direction bits ending in 1, but none of them ending in 0. The change would be 1 to 0 or 0 to 1 in the starting bit.

But memory is full of bytes like \$FF and \$7E. How could I operate on bits within the bytes? The solution was to use ASL and LSR instructions. The first means arithmetic shift left and the second means logical shift right. These assembly language instructions move all bits in a byte one position left or right and dump the extra bit into the *carry* flag. A zero bit is then inserted into the opposite end of the byte. I applied the ASL and LSR instructions frequently in the mirror-imaging routine shown in Listing 1, MIRROR!.

About MIRROR!

The first line contains the name of the routine. Line 2 announces the intention to use the routine later at \$300 (which will mean CALL 768 after

POKEing 6, shape number). Line 3 allows us to temporarily assemble at \$800, since the LISA assembler doesn't want us interfering at \$300. Lines 4-9 are where we define labels. Any shape must have a shape number, a starting address low byte, a starting address high byte, and flags to indicate whether we need to change bit 1, bit 4 or bit 7. For each shape byte, we set these flags to 0 and then inspect the bits to determine which of the three needs changing. If no left or right directions are discovered, then no bits are changed. If all commands in the byte are horizontal moving, then all of the flag bits (B1, B4 and B7) are set (incremented from 0 to 1), thus telling the FIXBYTE subalgorithm at lines 56-77 to set bits 1, 4 and 7.

Back at line 10, we have to deal first with the shape number. But what our routine really needs is the shape's starting address. To get the starting address, the routine multiplies the shape number by 2 in line 11. (In binary a left shift multiplies a number by 2, just as in decimal a left shift multiplies a number by 10.) Now, in line 12, we stick the result into the X register, to be used as an index displacement number in line 13.

Read pages 94-95 in your *Apple Manual* if you don't see how all this arrives at a starting address. The fact is, shape tables start with indexes and you must use the 2-byte indexes to get to the shape's starting address.

In line 14 we store the shape's displacement-from-table-starting-address (low byte) in SHAPELO, and then increment our index displacement value in X and load the high displacement byte (lines 14-16). Next we add 8 to the high byte (line 18) because the shape table itself is stored at \$800. If you've stored your table elsewhere, you'll need to change the data in addresses \$306 (line 13), \$30C (line 16) and \$30F (line 18). For instance, if your shape table were at \$9000, you'd want \$90 in place of \$8, and you'd need to POKE 774,144 (\$90 is 144 and \$306 is 774), POKE 780,144 and POKE 783,144.

Line 19 allows us to get the actual

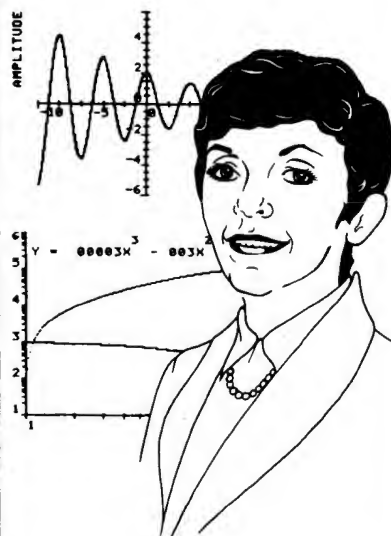
```

1 ;MIRROR!
2          ORG $300
3          OBJ $800
4  SHAPENUM EPZ $6
5  SHAPELO  EPZ $8
6  SHAPEHI  EPZ $9
7  B1       EPZ $FD
8  B4       EPZ $FE
9  B7       EPZ $FF
10         LDA SHAPENUM
11         ASL
12         TAX
13         LDA $800,X
14         STA SHAPELO
15         INX
16         LDA $800,X
17         CLC
18         ADC #$8
19         STA SHAPEHI
20  START   LDY #$0
21         STY B1
22         STY B4
23         STY B7
24         LDA (SHAPELO),Y
25         BEQ RRTTSS
26         TAX
27         LSR
28         BCS SIDE1
29         LSR
30         BCC TRY34
31         INC B1
32         JMP TRY34
33  SIDE1   LSR
34         BCS TRY34
35  ITSRIGHT INC B1
36  TRY34   LSR
37         LSR
38         BCS SIDE2
39         LSR
40         BCC TRY67
41         INC B4
42         JMP TRY67
43  SIDE2   LSR
44         BCS TRY67
45  ITSRIGHT INC B4
46  TRY67   LSR
47         LSR
48         BCS SIDE3
49         LSR
50         BCC FIXBYTE
51         INC B7
52         JMP FIXBYTE
53  SIDE3   LSR
54         BCS FIXBYTE
55  ITSRIGHT INC B7
56  FIXBYTE TXA
57         LDX B1
58         BEQ ZEROB1
59         ORA #$2
60         JMP FIX34
61  ZEROB1  AND #$FD
62  FIX34   LDX B4
63         BEQ ZEROB4
64         ORA #$16
65         JMP FIX67
66  ZEROB4  AND $1239
67  FIX67   LDX B7
68         BEQ ZEROB7
69         ORA #$128
70         JMP STOREIT
71  ZEROB7  AND #$127
72  STOREIT STA (SHAPELO),Y
73         INC SHAPELO
74         BNE CONT
75         INC SHAPEHI
76  CONT    JMP START
77  RRTTSS  RTS
78         BRK
79         BRK
80         END
    
```

Listing 1. MIRROR!.

"I like plotting equations with a computer, don't you?"

—Virginia Lawrence, Ph.D.
Chief Executive Officer



If you're like me, you'd rather not plot data by hand. That's why I've made sure that **CALCU-PLOT™** can plot your data and equations quickly and easily.

CALCU-PLOT™ can graph your equations, their derivatives, and their integrals.

And if you think our equation plots are great, wait until you see our data plots. You can choose linear, semi-log, log-log, or polar coordinates.

CALCU-PLOT™ is the professional equation solver from Human Systems Dynamics, publishers of The Statistics Series. Like the other programs in The Series, **CALCU-PLOT™** easily performs sophisticated work for professionals at an affordable price.

\$150.00

For more information, call me on our toll free number.



HUMAN SYSTEMS DYNAMICS

To Order — Call
Toll Free (800) 451-3030
In California (818) 993-8536
or Write

HUMAN SYSTEMS DYNAMICS
9010 Reseda Blvd. Suite 222/Dept. C
Northridge, CA 91324

Dealer Inquiries Invited



Fudge It!

shape address's high byte into SHAPEHI. Then the routine starts and we zero the flags. Next we load the first shape byte in line 24. The signal for the end of a shape is 00, so if line 25 detects a 0 with its BEQ (branch-if-last-result-equals-0), then the routine is all finished, as it will branch to the RTS (return-from-called-subroutine, in this case) in line 77, a line that is labeled RRTTSS, just to be cute.

Transforming the Codes

Now, on to the meat of the routine, transforming vector plot/no-plot codes. In line 25 we temporarily store the shape byte in the X register. Then we shift right in line 27. This puts bit 0 into the carry flag, which we can test in line 28 with a branch-if-carry-set (BCS) instruction.

If the carry is set, it means horizontal moving is occurring, so we must go to the side, according to the instruction. In this case we branch to SIDE1.

In lines 29–30 we branch to TRY34 (try-bits-3-and-4) if the next bit (#1) is 0. If it isn't then a down command has been found, which has a 1 in bit 1 in this case. BCC means branch-if-clear carry (carry equals 0). So, if we want the down command to remain intact with its bit 1 on, we'll need to increment the B1 flag, which is done in line 31. (You see, later—in the FIXBYTE subroutine—I's or 0's will be put into bits 1, 4 and 7 according to the status of bit flags B1, B4 and B7. This is true whether or not the bit fixing represents a change.)

In line 32 we jump down to the TRY34 routine. In 33–34 we shift the byte right again and if the bit that drops into the carry is on, we jump to TRY34. Otherwise, in line 35 we increment the B1 flag (INC B1) because the vector said move right (01). But, we need to reverse it, so we make sure it's changed to left (11) by setting the B1 flag. (The two bits in 01 or 11 are the 1 and 0 bits, and B1 refers to bit 1.)

In 36–45 we do much the same (this time for vector B) as we did in 27–35, except that in 36 we do an ex-

```
0300- A5 06 0A AA BD 00 08 85
0308- 08 E8 BD 00 08 18 69 08
0310- 85 09 A0 00 84 FD 84 FE
0318- 84 FF B1 08 F0 60 AA 4A
0320- B0 08 4A 90 0A E6 FD 4C
0328- 2F 03 4A B0 02 E6 FD 4A
0330- 4A B0 08 4A 90 0A E6 FE
0338- 4C 40 03 4A B0 02 E6 FE
0340- 4A 4A B0 08 4A 90 0A E6
0348- FF 4C 51 03 4A B0 02 E6
0350- FF 8A A6 FD F0 05 09 02
0358- 4C 5D 03 29 FD A6 FE F0
0360- 05 09 10 4C 68 03 29 EF
0368- A6 FF F0 05 09 80 4C 73
0370- 03 29 7F 91 08 E6 08 D0
0378- 02 E6 09 4C 12 03 60 00
```

Listing 2. Object code for MIRROR!

tra LSR to shift the plot/no-plot bit of vector A out of the way, as it's not relevant. In 46–55 we do the same for vector C, after first shifting vector B's plot/no-plot bit out of the way.

Lines 56–77 comprise FIXBYTE, where we set or zero bits 1, 4 and/or 7 of the vector shape byte according to the status of flags B1, B4 and B7. Recall that we've saved the original byte in the X register in line 26. We now retrieve that byte into the accumulator with TXA in line 56.

Then we load and test the B1 flag (57–58). If it's off, we branch to 61 to zero bit 1 (ZEROB1). If it's on, we add bit position #1's value to the byte in 59 with ORA #\$2. If we have to zero that bit, we do it with AND #\$FD.

In 62–66 and 67–71 we do the same, only for bits 4 and 7. In 72 we use the Y register (which was zeroed in line 20) as a no-displacement index as we store (STA) the new vector byte into the current byte address. Then in 73 we increment our byte address's low byte, and if this yields anything but 0 (BNE means branch-if-not-equal-to-0), we jump back to the START after branching to CONT. If the incrementing results in a 0, we have hit a page boundary and must increment the high byte of the current vector byte as well (line 75).

Well, there you have it. See Listing 2 for a binary file object code print-out. In using the subroutine, make sure you POKE 774,P : POKE 780,P : POKE 783,P right after BLOADING MIRROR, A\$300. P is the decimal value of the memory page number where the shape table starts. P would be 8 if \$800 were the starting address, 144 if \$9000 were the starting address, 31 if \$1F00 were the starting address, and so forth. See Listing 3 for an example of how to use this subroutine.

\$0	ZERO PAGE
\$300	MIRROR ROUTINE
\$400	TEXT PAGE
\$800	BASIC PROGRAM
\$2000	HI-RES PAGE 1
\$4000	HI-RES PAGE 2
\$6000	SHAPE TABLE \$2A00 LONG
\$8A00	ARRAYS VARIABLES STRINGS
\$9600	COLOR-FILL ROUTINE
\$9A00	BUFFERS, DOS, I/O, APPLESOFT, ROM
\$FFFF	

NO START-OF-PROGRAM POKES NEEDED AS THIS IS THE DEFAULT VALUE

LOMEM 35328

HIMEM 38400

Figure 3. Memory scheme with LOMEM specified. Note that normally variables and arrays from \$8A00 to \$9600 immediately follow the Basic program (here, at \$800-\$2000) and LOMEM is automatically set to the end of the Basic program, but I used the LOMEM command to change this.

Refer to Listing 4 for a shape table to experiment with using MIRROR!. It's called ANIMALS,A\$8FFF,L\$44E.

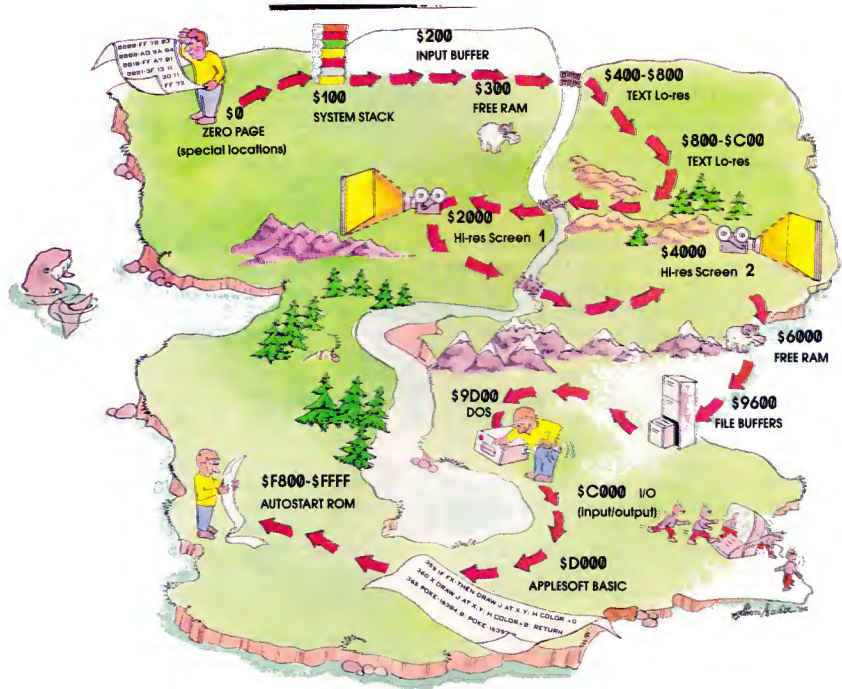
MEMORY MANAGEMENT

Memory management is a big problem with Applesoft Basic. In fact, one out of three letters I get concerns memory management. And this is not surprising, as the *Applesoft Manual* is less than helpful on the subject. When do you use HIMEM? When do you use LOMEM? When do you use start-of-program POKES?

First, remember that HIMEM is the top address (memory location) available to a Basic program, so strings and string arrays (see the *Applesoft Manual*, page 137) will be stored from HIMEM down towards the end of your Applesoft Basic program. HIMEM automatically defaults to \$9600 (38400) unless you change it, or unless you use a MAXFILES command. For most uses, I recommend MAXFILES1 immediately in your HELLO program to automatically reset HIMEM to 39590 (\$9AA6).

In most cases LOMEM should be left alone. However, here's a sample case illustrating when it is needed.

In the creation of one of the design modules in Hi-Res Interior Design, I filled the memory to the brim. I ended up with a 6000-byte Basic program, need for both hi-res screens used separately (toggling back and forth), a shape table \$2A00 long, the \$80-long MIRROR routine, and a \$400-long color-fill routine. See Figure 3 for what I did.



\$0	ZERO PAGE
\$300	SUBROUTINES
\$400	TEXT PAGE
\$800	SHAPE TABLES
\$2000	HI-RES SCREEN 1
\$4000	HI-RES SCREEN 2
\$6000	BASIC PROGRAM (DEFAULT LOMEM)
\$9300	SUBROUTINES
\$9700	DATA FILES
\$9A00	APPLE'S USE

START-OF-PROGRAM POKES ARE POKE 104, 96 AND POKE 24576, 0

HIMEM 37632

Figure 4. Memory scheme using default LOMEM and start-of-program pokes.

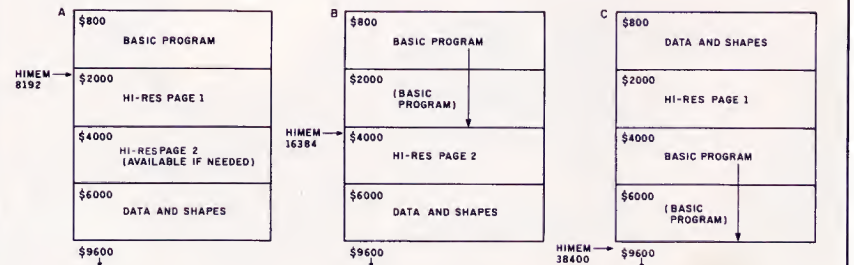


Figure 5. How HIMEM affects memory management.


```

10 HGR: ROT = 64: SCALE = 1: HCOLOR = 3
20 POKE 6,17: CALL 768: XDRAW 17 AT 99,99: REM 6 IS THE
    ADDRESS WHERE YOU GIVE THE SHAPE NUMBER AND 17 IS THE
    SHAPE NUMBER-THE CALL RUNS THE ROUTINE
30 CALL 768 : REM THIS RESTORES THE SHAPE TO ITS ORIGINAL
    ORIENTATION
40 POKE 6,3: CALL 768: DRAW 3 AT 209,79: CALL 768: REM MIRROR
    IT, DRAW IT, RE-MIRROR IT TO RESTORE SHAPE
    
```

Listing 3. Application of MIRROR!

Listing 4. ANIMALS,A\$8FFF,L\$44E, a shape table for experimenting with MIRROR!

8FFF- 16	9088- 37 35 2E 2E 3E 1F 3F 3C
9000- 00 22 00 46 00 6B 00 BF	9090- 3E 4E 29 0D 35 FF 2E 2D
9008- 00 2A 01 88 01 D3 01 13	9098- 4E 31 36 36 DF 64 24 C7
9010- 02 71 02 C1 02 F2 02 43	90A0- 3F 3E 2E 0D 1E 36 1F 24
9018- 03 7B 03 EF 03 21 04 37	90A8- 17 FE 24 0C 3C C3 33 AE
9020- 04 3C 3E 1C 0C 25 24 3C	90B0- 36 1F E4 36 DF E4 6C 24
9028- 0C 35 25 15 1E 1F 36 25	90B8- 2C 36 36 37 29 00 43 31
9030- 95 15 4D 3A 3F 3F 3F 3F	90C0- 36 36 36 36 36 36 2E 2D
9038- BF 2D 2D AD AE AE FF 1B	90C8- 25 27 24 37 36 27 24 2C
9040- 67 0C 24 04 00 01 2C 2E	90D0- 3C 2C 3C 2C 1C 24 24 3C
9048- 0C 1C 27 24 2C 1C 37 27	90D8- 1F 1E 1E 24 DF 3F 0C 0C
9050- 17 0E 15 36 27 97 17 DF	90E0- 0E 0C 0D 2E 24 1F 1F DF
9058- 2A 2D 2D 2D 2D AD 3F 3F	90E8- 3F 64 75 6D 2D 0D 04 3F
9060- BF BE BE 6D 09 E5 1C 24	90F0- 3F E7 27 38 3F 0C 0C 2D
9068- 04 00 38 06 27 37 37 37	90F8- AD 35 3F 77 2D 25 0C 1C
9070- 3F 27 25 27 25 25 27 25	9100- E4 8D 15 36 17 2D 25 0C
9078- 27 25 67 0C 2E 2C 2E 28	9108- 0C 0C 2D AD 3F 3F 3E 3E
9080- 05 05 05 05 2E 3E 0E 35	9110- 2E 65 2E 2C 2E 15 77 9E

Listing continued.

As I said, I rarely need LOMEM. For the rest of the modules in Hi-Res Interior Design and many other applications I use memory in a more convenient fashion. See Figures 4 and 5 for normal examples.

Notice in Figure 4 that no LOMEM commands are needed and that start-of-program POKES are vital. Most of the time, HIMEM's default value (\$9600, or 38400) is okay, so I needn't specify HIMEM, but rarely are start-of-program POKES not needed. Why?

The Importance of POKES

Well, the computer's start-of-program default value is 2048, or \$800, and POKE 103,1 : POKE 104,8 : POKE 2048,0 automatically resets the start-of-program values back to normal/default if you've changed them. But observe, in Figure 5, the limita-

Circle 247 on Reader Service card.

Put a Tutor in Your Apple Computer...



and sink your teeth into quality educational software from one of America's leading sources...Dorsett Educational Systems. We have over 1000 tutorial programs available! All feature full-time audio narration, easy to read upper- and lower-case characters, and visuals that clearly illustrate key concepts. These programs are designed to let students learn at their own pace, whether they are kindergarten level or college graduates; slow or exceptionally fast learners. And, anyway you slice it, the price for our software is ripe. Why not bite into our Apple tutorial programming today?

Only \$4.40 per program (\$8.80 for 2, one on each side of a half-hour cassette). \$59.90 for 16 programs (8 cassettes) in an album. Apple II requires a T/T Plug-in board, \$99.00, and T/T Stereo Cassette Player, \$79.90.

Send for a catalog of over 1000 programs for Apple, Atari, TRS-80, etc.

For more information, write or call:
TOLL FREE 1-800-654-3871



DORSETT
Educational Systems, Inc.

Box 1226, Norman, OK 73070

Dealer
inquiries
welcome.



Apple is a registered trademark of Apple Computers

tions of an \$800-based Applesoft program.

In case A there are 6144 (\$1800) bytes for the Basic program and its arrays, strings and variables. This is perfect if your program is short, but not many programs are that way anymore.

In case B there are 14336 (\$3800) bytes for the Basic program and its arrays, strings and variables. If the Basic program is rather short, without too many variables and arrays, if you need only one hi-res page, and if you have as much as \$3600 worth of data or tables to load into memory, this may be adequate. However, look out that you don't run out of memory.

Now let's look at case A with a changed HIMEM. Let's put it at 38400 (\$9600). Now there are 6144 bytes (if hi-res page 1 is used) for the

Listing continued.

```

9118- 32 27 1C 1E 20 27 27 3F
9120- 3F 0E 0D 1E 37 36 25 2C
9128- 00 08 38 3F 17 BF 17 3F
9130- 17 0D 0D 3E 1F 37 0D 0D
9138- 0D 3E 1F 3F 96 2D 0D 2D
9140- 38 1F 67 6D 25 25 27 67
9148- 61 0C 65 DC 60 2D B5 D3
9150- 2A 2D FE 37 35 37 35 35
9158- 37 9F 2D 25 55 2D 3C 2C
9160- 1C 27 27 25 67 24 24 07
9168- 28 0C E4 1C 3F 3F 3F 17
9170- 17 17 17 BF 3F E7 24 0C
9178- 2D 36 00 BE 17 1F 0C 1C
9180- 04 28 2E 2E 20 07 00 01
9188- 21 24 0C 0C 04 28 AE 76
9190- 04 28 24 0C 15 BE 35 36
9198- 36 17 36 36 36 36 07 20
91A0- 24 24 24 04 E0 33 AE 37
91A8- 36 36 B7 23 24 0C 04 38
91B0- 3A E0 96 8A 12 3F 24 24
91B8- 3F 3F 3F 37 0D 3E 37 3E
91C0- 3F 24 24 24 24 24 24 64
91C8- 0C 0C 2D 2D 2D 05 05 05
91D0- 05 00 D2 E7 36 36 36 AE
91D8- 3F 27 24 24 24 2C F8 12
91E0- 17 36 F6 AE 3F 24 24 24
91E8- 64 64 0C 1C 3F 24 E5 64
91F0- 0C AD 15 15 15 15 AD AD
91F8- AD AD 15 36 15 AE 36 3E
9200- 67 1C 1C 04 B8 17 36 3E
9208- 3F 0C 24 3C 28 25 FC 13
9210- 37 00 3F 3F 27 24 24 64
9218- 2C 1C BC E7 BE 35 15 36
    
```

```

9220- 36 36 36 F6 1E 36 36 4D
9228- 24 24 04 28 2E 28 2D 2D
9230- F5 0E 36 36 4D 24 24 0D
9238- 24 1C 1C 1C 3F 3F 4E 31
9240- AE 06 00 1C 1C 24 1C 3F
9248- 4C 2D 15 2D 65 2E 06 00
9250- 04 00 00 00 00 00 00 00
9258- 00 00 00 00 00 00 00 00
9260- 04 00 00 00 00 00 00 00
9268- 00 00 00 00 00 00 00 00
9270- 89 AA 2D FE E3 38 17 BF
9278- 17 3F 0E 36 1E 27 1F 6C
9280- 3C 27 24 2C 2C 1C 64 64
9288- 0C 65 0C 2D 65 2D 0C 0C
9290- 2D 2E A8 36 36 3E 20 24
9298- 97 16 1E 04 38 17 3F 1C
92A0- 3E 3C 3E F7 3E 17 17 2D
92A8- 68 49 89 62 0C 0C 04 00
92B0- 00 00 00 00 00 00 00 00
92B8- 00 00 00 00 00 00 01 81
92C0- 43 2C 24 25 24 24 0C 2D
92C8- 2D 3E 3F 07 36 36 D6 D6
92D0- 3E 0E 35 35 37 35 3F 3F
92D8- 3F 17 2D 2D 2D 2D 3E 17
92E0- 2D DE 07 3C 3E 3C 3E 3C
92E8- 3E 24 37 07 20 E5 24 24
92F0- 00 18 24 24 04 18 36 36
92F8- 36 27 24 24 24 37 36 36
9300- 3E 3C 2C 24 24 37 BF BE
9308- AE 37 15 2D F5 37 35 17
9310- BE 17 2E 25 0C 0C 0C 36
9318- BE 2D 64 3C 20 15 2D 0C
9320- 2D 0C 15 9F 15 BE 17 2D
9328- 0C 0C 24 AC 15 15 BE 2D
    
```

Listing continued.

Circle 352 on Reader Service card.

20 MB Hard Disk only \$1695!

PLUG IN AND GO! We have a full line of Apple compatible 5-25 MB removable cartridge and/or fixed drive systems. All drives come complete with:

- Cabling
- Installation instructions
- 120 day no-hassle warrantee
- Factory tested approval

Send for our **FREE** catalog—Circle the reader response number:
Call Toll Free to order: 1 (800) 531-5002. In Texas call (512) 441-7890.

Slimline & Full size Floppy Disk Drives from \$199.95

Controller cards
only \$59.95

MICRO-DESIGN

6301 B Manchaca Rd. Austin, TX 78745



Innovation

State-of-the-Art products, such as UltraTerm® our 128-column display card, providing more of what you need when you need it.

+

Quality

Each Videx Product is fully tested, TWICE, before it ever reaches your computer. That's why Videoterm has the best track record in the business.

+

Support

Ask your Dealers and friends! Quick, Competent help, just a phone call away, has made Videx the recognized leader in customer support.

=

Excellence

Videx...It all adds up...for YOU!

You can't buy better products to enhance the power and ease-of-use of your personal computer.



For More Information Call us at
(503) 758-0521
1105 N.E. CIRCLE BLVD
CORVALLIS, OR 97330

"What about dumping DOS and putting HIMEM up at \$C000?"

Basic program, and for arrays and variables. But where will you put shapes and data? At \$4000 if hi-res page 2 is unused, or at \$6000 if hi-res page 2 is used. Actually, in practice I prefer, in a situation like this, to set HIMEM at 36864 (\$9000) and have \$9000-\$9AA6 (with MAXFILES1 in effect) for shapes and data. Next I start the Basic program at \$4000 with POKE 104,64 and POKE 16384,0, and have 6144 bytes for data from \$800 to \$1FFF. This Basic program repositioning precludes strings from overwriting the hi-res pages when they grow down too far. (The symptom is garbage on the hi-res screen.)

Now, since Basic program repositioning is already being pointed out as a cure for most memory management problems, let's move on to case C.

The Best Choice

In case C there are 6144 (\$1800) bytes for data and shapes, one hi-res page used, and \$5600 (22016) for the Basic program and strings, arrays and variables. (You can put more data in \$9600-\$9AA6 if MAXFILES1 is in effect.) For an even longer Basic program, with MAXFILES1 in effect you can use \$4000-\$9AA6, which is 23206 (\$5AA6) bytes. That must include some room for variables, strings and arrays, of course.

I find that the many versions of case C are more useful than case A or B. Only POKE 104,64 and POKE 16384,0 need be in effect before you LOAD or RUN your Basic program. If both hi-res screens are needed, simply use start-of-program POKES of POKE 104,96 : POKE 24576,0; and then start your Basic program at \$6000, which gives you \$3600 (13824) bytes for Basic programs without MAXFILES1 and \$3AA6 (15014) bytes with it. Still quite healthy. This is a good arrangement for programs requiring a picture, palette of colors or drawing of

Listing continued.

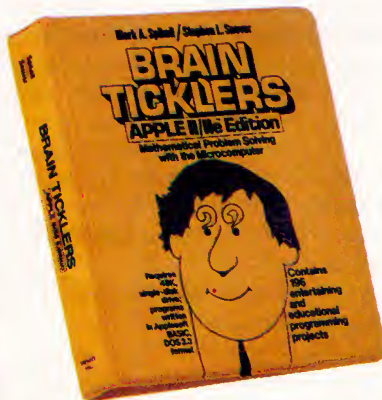
```

9330- 24 24 1C 1C AC 21 FC 6C
9338- E4 F7 3C 3F 3F 3F 07 00
9340- 00 00 3B 3F 77 35 37 37
9348- 6D 3A FF 3F 3C 2C 04 2D
9350- 38 3F 68 FC 6C 3C 0C 2D
9358- 2D 2D 2D 2D 2D AC 35 AD
9360- 35 1E E7 07 06 06 2E 2E
9368- 2E 15 3F 1F 3F 3C 2C 2C
9370- 38 37 07 38 3F 00 00 00
9378- 00 00 11 1E 1E 3F 37 4D
9380- 11 37 1E 04 38 1E 1E 0C
9388- 38 3C FE 28 2C 2D 38 3F
9390- 0C 18 08 2D 68 1C 9F 3F
9398- 3C 2C 25 67 2C 2E 2C 35
93A0- 2E 60 36 05 20 36 25 AC
93A8- 15 15 1F 6E 31 DF 6E 31
93B0- DF 6E 31 36 9F 9B 2D 0C
93B8- 0D 15 36 0D 08 24 24 E4
93C0- 1C 1C 17 06 00 65 0C 36
93C8- 35 BE 0D 08 18 04 38 6C
93D0- 32 B6 61 3C 04 60 0C 96
93D8- 2E 2D 95 09 24 FC 0C 24
93E0- 24 24 E4 4C 92 0A 1E 4E
93E8- A8 15 36 36 36 00 48 1E
93F0- 36 76 2E 2D 1C 1C 24 AC
93F8- 2D 65 65 3C 27 2C 64 DF
9400- 92 1C 1C 96 07 20 17 07
9408- E0 3F 3F 3F 17 BF 3E 2E
9410- 3E 36 05 A8 76 2E 2D 1C
9418- 1C 44 64 D6 2A 2D 2D 00
9420- 4D 1C 1C 1C 04 20 37 36
9428- BF 0D 35 FF 6E 36 36 36
9430- 6D E5 E4 1C 24 00 DF 0C
9438- 0C 0C 04 20 35 36 AD 1F
9440- 37 6D FE 36 36 36 FF 67
9448- 64 0C 24 00 00
  
```

some type that occasionally gets toggled to when hi-res page 1 is the main active graphics page.

One last consideration: What about dumping DOS and putting HIMEM up at \$C000 (49152)? Yes or no? Yes, if your memory will hold everything to preclude the need for further DOS usage (file BLOADing or text file READING). The limit is \$C000, since that's where I/O begins. A graphics-using program could be from \$4000 to \$C000, or \$8000 (32768) bytes long, in this situation, including variables, arrays and strings. This may be touchy to work with, so be careful. And as I advise people experimenting with EXECing programs, make two back-ups, not one, and update twice an hour. I normally advise one back-up, but with DOS-dumps and EXECs I've seen two entire disks crash simultaneously. An ounce of prevention is worth a pound of reprogramming. ■

Prentice-Hall speaks an Apple language other publishers have forgotten. **English.***



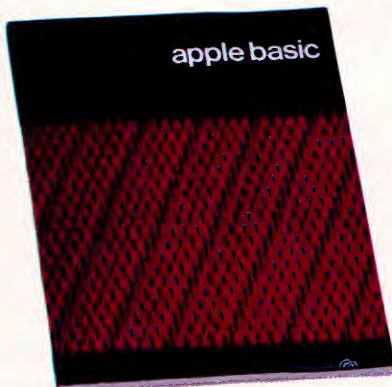
BRAIN TICKLERS: APPLE II/IIe™ Edition: Mathematical Problem Solving with the Microcomputer by Mark A. Spikell and Stephen L. Snover. Offers 196 entertaining and educational programming projects. \$29.95



APPLE II PROGRAMMER'S HANDBOOK by Richard Vile, Jr. Teaches four most common Apple programming languages: Integer BASIC, Applesoft BASIC, Apple (UCSD), Pascal, and 6502 Assembly Language. Plenty of applications. For intermediate programmers. \$16.95



APPLE II-6502 ASSEMBLY LANGUAGE TUTOR by Richard Haskell. A specially designed book/disk tutorial that makes it easy to learn assembly language programming and interfacing techniques. \$34.95



APPLE BASIC by Richard Haskell. A step-by-step, illustrated intro that shows how to write programs for financial management, graphics, games, math problems, and more. \$12.95



INTERFACE PROJECTS FOR THE APPLE II by Richard C. Hallgren. Hardware-oriented projects that are easy to build, and enable users to discover Apple II's vast capabilities. \$12.95



LEARNING LISP by Gnosis. An intro to the much talked-about language of artificial intelligence. Packed with examples and exercises. Disk available. \$14.95

PRENTICE-HALL BOOKWARE™/THE LEADER IN COMPUTER PUBLISHING

For more information about our computer books and software, write to us at the address below. Dealer inquiries welcome.
Prentice-Hall, General Publishing Division, Englewood Cliffs, N.J. 07632

* We guarantee that all our guides are easy to read and simple to apply without the aid of a reference library, a computer salesperson, or a niece who just graduated from M.I.T.

The Applesoft Adviser

by Dan Bishop



On Nonstandard Basic and Other Things

One of the interesting aspects of doing custom programming for a variety of businesses is the assortment of microcomputers I find myself working with. This provides a broader perspective on programming and on the microcomputer field than I would get from working exclusively with a single machine. It is also frustrating at times due to the differences in hardware design and in the versions of Basic that these systems use.

I'd like to share some of my experiences along these lines with you. If you yourself deal with different machines, or translate Basic programs from one to another, you may find some of these observations helpful.

Keyboard Layout

It is unfortunate that there is no standard for the layout of a computer keyboard. The "hunt-and-peck" typist has little trouble in this area, but a touch typist like me can go absolutely insane. Imagine working all morning on an Apple II with its small keyboard and then switching over to a IIe or an IBM PC for the afternoon. Half of the special function keys are not where they were before lunch!

The most flagrant "floating" keys are listed in the Table (page 26). At least the characters for these symbols are printed on the keyboard so, even with a totally unfamiliar system, you can eventually find what you are looking for. Unfortunately, many less-used symbols are hidden as control keys. The Λ symbol, for example, is a control-6 on the Radio Shack Model II and doesn't even exist on the Model I. The back-slash is not avail-

able on some systems, on others it may be a control-/ or control-something else. Unfortunately, most standard Basics that provide a print-using statement require the back-slash to define alphabetic fields.

Bracketing symbols also present problems. Parentheses are dedicated keys mentioned in the Table. But brackets and braces may be dedicated keys on some keyboards, control keys on others, or not available at all.

Finally, no discussion about computer keyboards is complete without taking the manufacturers to task for the lack of ergonomic considerations in their designs. Typists know where to find the shift key and the carriage return key. To relocate those keys even slightly is to court disaster from the touch typist's point of view. To make matters worse, on many keyboards several other keys are crowded around these slightly displaced keys, making inadvertent (and sometimes disastrous) errors all too frequent. Many's the time I've been near the end of a long, complex line of code on an IBM PC, and have reached out to strike a 1 and hit the escape key instead, wiping out my line of code entirely!

Hardware Differences

Several rather important differences beyond the keyboard exist between machines. I'm not upset about those that distinguish one machine from another—that's the whole idea behind competition. What grates me are the differences that have no bearing on the machine's quality or functions.

One example is how disks are to be inserted into the drives. The only standard I am aware of is that the exposed oval always seems to be inserted first. On drives that stand upright, half the machines I work with require the label to be facing to the right and half require the label to be facing to the left! "No sweat with horizontal drives," you say? Take a look at the DEC Rainbow! The top drive requires the disk to go in label side up. The bottom drive requires label side down!

And what about the write protect notch? Were you aware of the fact that the notch on 5¼-inch disks should be covered for write protection while for 8-inch disks the notch must be uncovered?

Here's one that Apple users in particular should be aware of. Apple has suggested that it is safe to turn the computer on and off while disks are in the drives. This may be alright for Apple drives. However, almost all other manufacturers I know of strongly suggest that the drives be empty when turning the machine on or off to prevent possible magnetic damage to the disks. If you should use someone else's machine, be aware of this requirement.

Printers are another problem. Most printers require that the power be turned off before scrolling the paper using the platen knob on the side of the machine. This is because

Address your correspondence to Dan Bishop at Custom Comp, PO Box 429, Buena Vista, CO 81211.

— The Applesoft Adviser —

the stepper motor is engaged whenever the power is on. The paper can be advanced automatically while leaving the printer on by pressing either the line feed or form feed button. On most printers there is a third button, called the "on-line" or "select" switch. Many printers require that this switch be pressed first, thus taking the printer off-line, before the line feed and form feed buttons work. A few printers do not have this requirement.

And while I'm discussing printers, isn't it a shame that common software controllable features such as setting margins, selecting compressed or enlarged printing, and so forth, can't have common code values. I work with enough different printers through the course of a week that any time I need a special printer command I must take the time to look it up. Trusting to memory I would be wrong half the time.

When Basic Isn't Basic

Probably the most frustrating problems with working on several machines, each with its own version of Basic, lie in the differences between the dialects of the language. Some of these problems are unavoidable, because some versions are more sophisticated than others and have command structures that are unrecognizable by less advanced Basics. Other problems could be avoided with a little effort at standardization.

For example, why does Applesoft Basic stand alone (as far as I know) in evaluating relational and logical expressions as 0 (false) or +1 (true)? Most other Basics evaluate a true expression as -1. This presents subtle problems in converting a program when one of the languages is Applesoft.

For an example, try the following short program on your computer:

```
10 A=50
20 PRINT (A=50); " FOR TRUE."
30 PRINT (A=70); " FOR FALSE."
40 END
```

This simple test will reveal which convention your computer's Basic uses. The discrepancy could be a problem in an expression like:



Overlay graphics on video with the amazing *VideoSprite*™

Now you can easily (and inexpensively) add graphics and animation to video from an Apple™ computer. Introduce yourself to VideoSprite. A new solid state board that plugs into the Apple computer and allows a composite overlay of two color video signals.

One signal is generated via the VideoSprite; the other can originate from any external color source, i.e., a color camera, video recorder, disk or computer. The appearance is that one video signal is overlaid on top of the other.

Thus, graphics or text created via the Apple appears superimposed over the video action. There's more! With VideoSprite, you can create and control colorful sprites using the Apple. (A sprite is any large, programmable object capable of independent movement, for example, a cartoon character.)

And best yet is the low cost! VideoSprite is only \$795 retail, including software. (Even if you need to buy the Apple too, your investment is still a fraction of other alternatives.)

For all the details,
write or call
Synetix, Inc.



Synetix Inc.

10635 N.E. 38th Place
Kirkland, WA 98033
(206) 828-4884 (800) 426-7412

™ Apple is a registered trademark of Apple Computers, Inc. ™ VideoSprite is a registered trademark of Synetix, Inc.

$B = 1 * (A\$ = \text{"MON"}) + 2 * (A\$ = \text{"TUE"}) + 3 * (A\$ = \text{"WED"}) + 4 * (A\$ = \text{"THU"}) + 5 * (A\$ = \text{"FRI"}) + 6 * (A\$ = \text{"SAT"})$

This equation provides B with a value from 1 to 6, depending on the day of the week assigned to A\$. That is, B has a value from 1 to 6 if the expression is written in Applesoft using the +1 convention for true expressions. Most other computers would return a value from -1 to -6. (By the way, note how this expression avoids six separate IF commands, yet accomplishes the same result.)

Of course, to convert such a statement to a computer using the opposite convention just surround the expression with parentheses and begin it with a minus sign.

Many of the newer computer systems are using a form of Basic that requires spaces surrounding all Basic keywords. This creates a real hassle in converting an older program for the newer machine. This is one case, in fact, where the hassle is so great that numerous commercial programs have been written to insert spaces for you. If you are ever faced with this type of conversion, buy one of these utility programs. The time and effort you'll save will be well worth the money!

One such space-related problem caught me totally by surprise, and took me awhile to figure out what the difficulty was. Most Basics will allow you to simultaneously end several nested FOR...NEXT loops with one NEXT statement, such as NEXT I,J,K. Simple as that statement may appear, it will not work on an IBM PC! The reason is that, based on the "spaces-surrounding-keywords" rule, the J and K must be preceded by spaces.

This problem isn't universal, however. A simple test to check it out on a new system could be:

```
10 FOR I=1 TO 10
20   FOR J=1 TO 5
30   NEXT J,I
40 IF I<>11 THEN PRINT"THIS SYSTEM
   REQUIRES A SPACE BETWEEN THE
   COMMA AND THE I":END
50 PRINT"NO SPACE NEEDED":END
```

If the program runs at all, the comment will tell you if the addi-

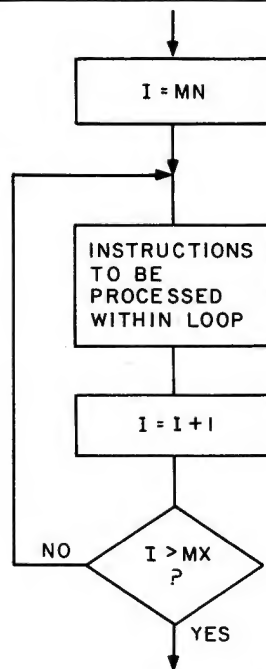


Figure 1. Flow chart of FOR I=MN TO MX...NEXT I for systems that evaluate the loop counter at the end of the loop. The loop instructions will always be carried out at least once.

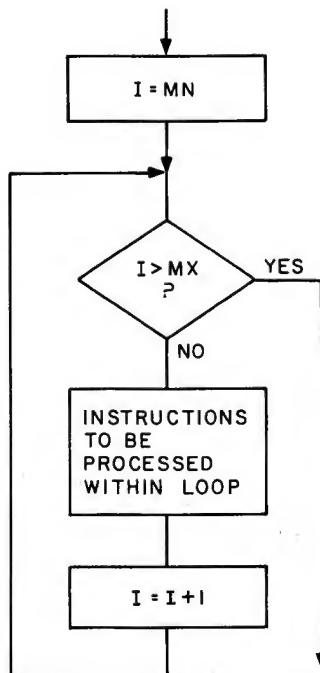


Figure 2. Flow chart of FOR I=MN TO MX...NEXT I for systems that evaluate the loop counter at the beginning of the loop. If MN is larger than MX at the start, the loop instructions will never be executed.

tional space is mandatory. However, you might also simply get a SYNTAX ERROR IN 30 or a FOR WITHOUT NEXT message.

A well-documented difference among Basics is how a FOR...NEXT loop is handled when the initial value for the loop counter exceeds the maximum value designated. Most early microcomputer Basics would allow the loop to process one time without regard to the loop counter's initial value. Figure 1 is a flow chart that illustrates why this is so. It is due to the fact that the comparison between the value of the loop counter and its maximum allowable value is not made until the loop has processed once all the way through to the NEXT statement.

Advocates of structured programming abhorred this situation (and rightly so, in my opinion). Perhaps due to their anguished cries, most modern microcomputer Basics have set the decision at the start of the loop (Figure 2). This completely bypasses the processing instructions within the loop if the initial value of the loop counter already exceeds the loop limit.

Again, one of the easiest ways to determine how a FOR...NEXT loop is handled by a specific computer is to run a simple program to test it. For example:

```
10 MN=50:MX=25
20 FOR I=MN TO MX
30   PRINT"THIS COMPUTER WILL
   ALWAYS PROCESS A LOOP ONCE"
40 NEXT I
50 IF I=51 THEN 100
60 PRINT"THIS COMPUTER WILL
   BYPASS THE LOOP IF THE
   COUNTER'S INITIAL VALUE
   EXCEEDS THE LIMIT."
100 END
```

As with the previous two situations, most manuals will not specifically state which convention their Basic uses.

Compound Decision Structures

Applesoft Basic does not support the IF...THEN...ELSE structure for decisions. This makes writing structured programs a little awkward and produces a leap-frog effect in jump-

BASF QUALIMETRIC™ FLEXYDISKS® BUILT FOR ETERNITY - WARRANTED FOR A LIFETIME.

BASF Qualimetric FlexyDisks® offer you more...an extraordinary new lifetime warranty. The BASF Qualimetric standard is a dramatic new international standard of quality in magnetic media...insurance that your most vital information will be secure for tomorrow when you enter it on BASF FlexyDisks today.*

We can offer this warranty with complete confidence because the Qualimetric standard reflects a continuing BASF commitment to perfection...a process which begins with materials selection and inspection, and continues through coating, polishing, lubricating, testing, and 100% error-free certification. Built into our FlexyDisk jacket is a unique two-piece liner. This BASF feature traps damaging debris away from the media surface, and creates extra space in the head access area, insuring optimum media-to-head alignment. The result is a lifetime of outstanding performance.

When your information must be secure for the future, look for the distinctive BASF package with the Qualimetric seal. Call 800-343-4600 for the name of your nearest supplier.



ENTER TOMORROW ON BASF TODAY



BASF

*Contact BASF for warranty details. © 1982, BASF Systems Corporation, Bedford, MA

Circle 327 on Reader Service card.

**"Different Basics
will interpret
this statement
in different ways."**

ing around the processing instructions that handle the false and true segments of the decision. However, it does alleviate any problems with nested IF...THEN...ELSE statements.

For Basics that do support the ELSE structure, it is possible to write a single Basic statement that contains several decisions. This type of statement is referred to as a compound or "nested" decision statement. An example might be:

```
IF A = B THEN IF C = A THEN 120 ELSE 140
ELSE 200
```

Note that the IF C = A THEN 120 ELSE 140 part *seems* to be nested inside the IF A = B THEN ... ELSE 200 part, much the same way that FOR...NEXT loops can be nested within each other, but *beware!* Different Basics will interpret this statement in different ways! Some will consider it nested, with the first ELSE segment associated with the last-occurring IF segment. Figure 3 illustrates the logical flow for these systems. As you can see, if A > B then the program goes to 200. On the other hand, if A = B then the program goes to line 120 if C = A and to line 140 if C > A.

But some Basics associate the first ELSE with the first IF (Figure 4). This is definitely *not* a nesting situation. Actually, I don't know what it is. But I ran across the problem using a Radio Shack Model 16 Xenix system and also a Radio Shack Model 4 (both of which use Microsoft Basic). I assume the problem may be widespread. Not all Microsoft Basics work this way, however, making the situation even more confusing.

The only way you can be sure that a compound IF...THEN...ELSE structure will be interpreted consistently is to avoid the nested construction altogether. This may require some alteration in the logic design of the program, but a compound structure such as:

```
IF R = J THEN 140 ELSE IF M = J THEN 150
ELSE 180
```

will always be properly executed. There is *no* nesting in this statement.

Some other features that could easily have been standardized but aren't include the TAB function (some systems count the first print column

as column 0, others as column 1), cursor positioning commands (PRINT @ for Radio Shack, LOCATE X,Y for the IBM PC, and HTAB, VTAB for Apple), and clear-screen commands (HOME versus CLS).

Conclusion

I hope these observations will be helpful to those of you who deal with various machines or different versions of Basic. If you are writing a program that you hope may become universally available, you might keep some of these problems in mind and write your code to avoid difficulties

on other machines.

This column marks my eighteenth contribution to *inCider*. The editorial staff has requested that, beginning next month, I redirect the material toward a tutorial development of Basic from the "basics" up. If you are new to the field of computing and anxious to get started at writing your own programs, be sure to tune in to "The Applesoft Adviser" in the July *inCider*! ■

(and)	variously over 8, 9 and 0
" and '	over 2 and 7 if not on right edge of keyboard
+ and =	on top row or on right edge of keyboard
@ and A	any old place will do
< and >	always over , and . ? Guess again! DEC Rainbows put these next to the left shift key.

Table. The most flagrant "floating" keys and their various locations.

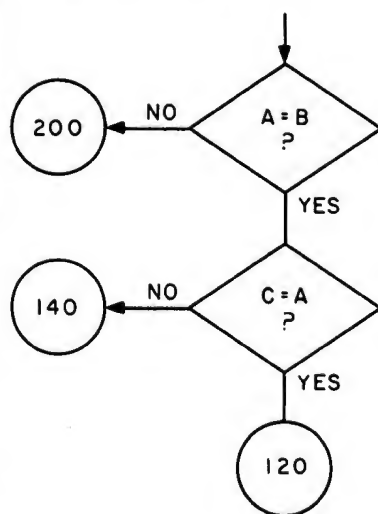


Figure 3. Flow chart of the compound statement IF A=B THEN IF C=A THEN 120 ELSE 140 ELSE 200 for systems that recognize nesting.

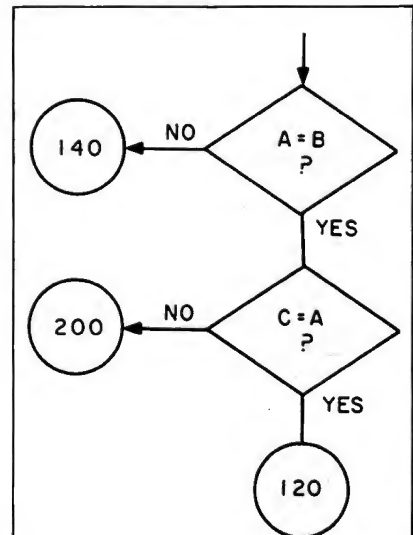


Figure 4. Flow chart of the same compound statement illustrated in Figure 3 for systems that do not recognize nesting. Notice the totally different outcome!

System Saver® didn't become the Apple's number one selling* peripheral by being just a fan.

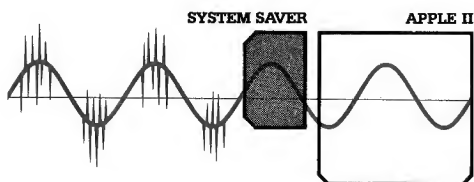
What made over 100,000 Apple® owners fall in love with System Saver? The answer is simple. It's the most versatile, most convenient, most useful peripheral ever made for the Apple.

System Saver filters out damaging AC line noise and power surges.

70-90% of all microcomputer malfunctions can be traced to power line problems.** Problems your System Saver guards against.

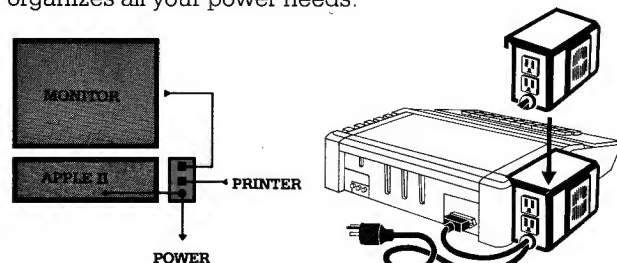
Power line noise can often be interpreted as data. This confuses your computer and produces system errors. Power surges and spikes can cause severe damage to your Apple's delicate circuitry and lead to costly servicing.

System Saver clips surges and spikes at a 130 Volts RMS/175 Volts dc level. A PI type filter attenuates common and transverse mode noise by a minimum of 30 dB from 600 kHz to 20 mHz with a maximum attenuation of 50 dB. You end up with an Apple that's more accurate, more efficient and more reliable.



System Saver makes your Apple more convenient to use.

No more reaching around to the back of your Apple to turn it on. No more fumbling for outlets and cords to plug in your monitor and printer. System Saver organizes all your power needs.

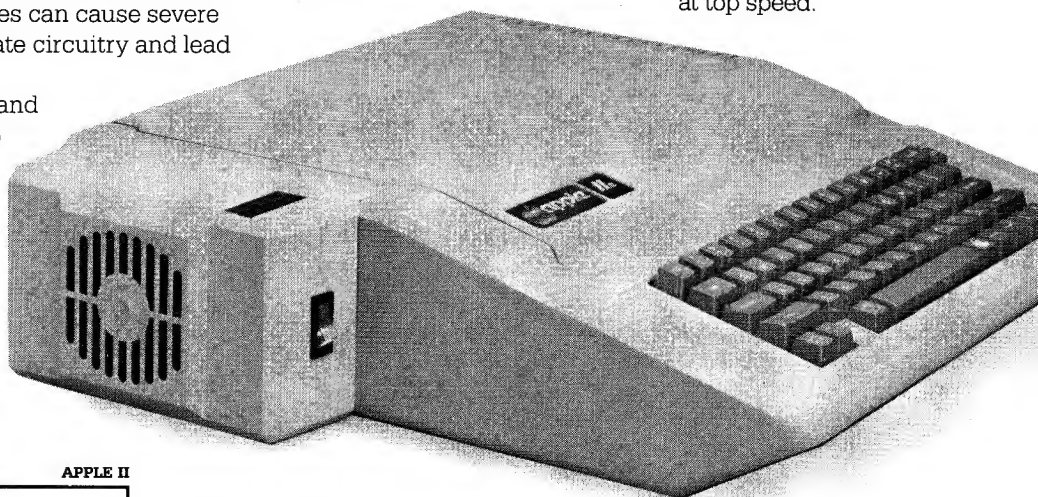
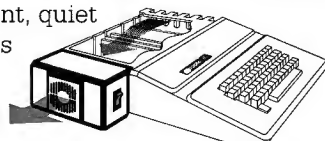


It functions as a multi-outlet power strip with two switched outlets. Plus System Saver offers the ultimate convenience; a front mounted power switch for fingertip control of your entire system.

System Saver lets your Apple keep its cool.

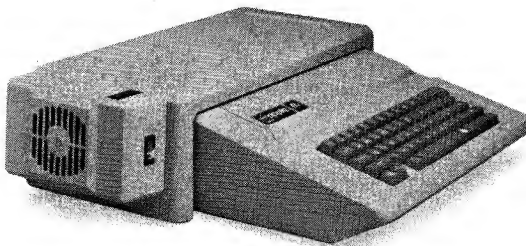
Today's advanced peripheral cards generate heat. In addition, the cards block any natural air flow through the Apple IIe creating high temperature conditions that shorten the life of the Apple and peripheral cards.

System Saver's efficient, quiet fan draws fresh air across the mother board, over the power supply and out the side ventilation slots. It leaves your Apple cool, calm and running at top speed.



So if you want to keep damaging heat, line noise and power surges out of your system for good, pick up the only peripheral that's in use every second your computer is in use. The System Saver. You'll soon come to think of it as the piece Apple forgot.

Compatible with Apple stand



\$89.95 at Apple dealers everywhere.

K KENSINGTON MICROWARE

251 Park Avenue South, New York, NY 10010
(212) 475-5200 Telex: 467383 KML NY

Circle 86 on Reader Service card.

*Softsel Computer Products Hot List. **PC Magazine: March 1983.

System Saver is UL Listed. System Saver's surge suppression circuitry conforms to IEEE specification 507 1980, Category A. Available in 220/240 Volts, 50/60 Hz.

System Saver is a registered trademark of Kensington Microwave Ltd.
© 1983 Kensington Microwave Ltd. System Saver is patent pending.

Stalking the Low-Cost Daisywheel Printer

by Roger Hart

When I bought my Apple system a few years ago, I chose a dot-matrix printer based on a shallow pocketbook. At the time, the least expensive letter-quality printers were in the neighborhood of \$2000—too fancy for my limited means. So, like many of us Apple owners, I settled on an inexpensive, yet high quality, dot-matrix printer. My Epson MX-80 was a good compromise between quality and cost and would be good enough for preparing query letters and manuscripts.

I have always been a little bothered by the “computer” look to the print, especially when I send a letter and manuscript to a potential publisher. My concern over print quality got lots of confirmation when I received my *1984 Writer's Market*, a book listing publisher's needs and requirements.

Publishers are who I'm trying to sell, so what they want (and sometimes demand) is important to me. Hundreds of book and magazine publishers have listings that state, “no computer print-out submissions,” “prefers letter-quality to dot-matrix,” or “we process only letter-quality manuscripts.”

I knew that this first comment only indicated a lack of understanding about computers. Publishers simply couldn't tell if a manuscript was typed on a typewriter or printed on a letter-quality printer. I also realized that their flat refusal to accept “computer printouts” was based on the lower quality of dot-matrix printers, especially when used with a bare-bones

word processing program which generates poorly-shaped characters. These programs, without proper lowercase descenders—those parts of letters like *p* and *y* that extend below the line—are hard to read. I have seen a few myself and, indeed, they are a strain to read. Worse than that, it was obvious that they were creating a prejudice in the minds of editors and publishers. Struggling authors do not need to further prejudice their case. Clearly, I had to do something.

Luckily, a great many daisywheel printers have been recently introduced into the market selling for under \$1000. A judicious bargain-hunter will find some of these printers selling for less than \$500, even under \$400. If, like me, you need a typewriter-quality printer but don't want to spend as much on the printer as the rest of the system cost, these new printers are good news. If you don't own a printer yet, you may want to carefully consider your needs and settle on one of the 24 low-cost daisywheel printers described below.

This recent flood of low-cost letter quality printers is composed of two different products: the lighter, scaled-down versions of the traditional daisywheel computer printers, and the portable or office typewriters that are interfaced to receive the data from



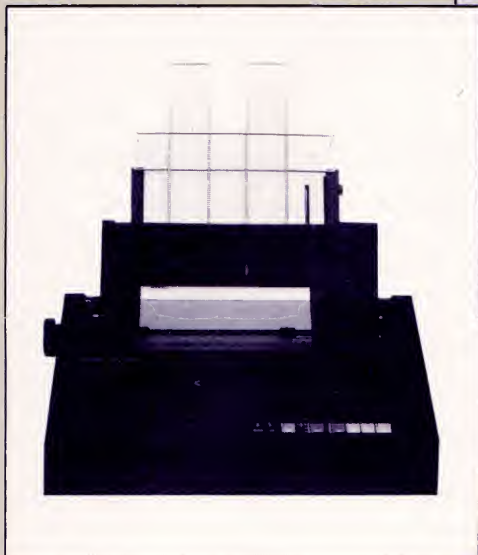
The Smith-Corona Memory Correct III Messenger.

your computer and translate it quickly and effortlessly into typed copy.

In my quest for a low-cost daisywheel printer, I found almost 30 models on the market. Two years ago, there were none. As in any situation where there are multiple choices, certain trade-offs must be considered.

How important is speed? Do you really need a printer that prints 20 cps (characters per second)? If you have a small to fair-sized business, you may well need one of the faster low-cost printers. Preparing a great many personalized form letters or long reports and manuscripts will take less time if you have invested in one of the higher-speed printers. This article, for instance, is about 15,000 characters in size. It takes 25 minutes to print out at

Roger Hart lives at 437 So. Baboosic Lake Road, Merrimack, NH 03054.



The DTC StyleWriter by Data Terminals & Communications.

10 cps or 11 minutes using the fastest printer (23 cps) described here. In business, time is money. For home users, however, money usually comes first. It's up to you and your needs. If you use your computer mainly for home use, then one of the less expensive light duty printers or interfaced typewriters will do the job nicely. A letter or two a day with an occasional report will be handled with ease to you and your pocketbook.

Also consider if a buffer will allow you to use a slower printer. Several of these low-cost printers have built-in memory buffers. You print from these buffers while you use your computer for text and data entry. The printer's buffer memory frees your computer's memory from being tied up while you print. You will need to print on continuous-form paper to gain the full advantage of printer buffers. When printing single sheets, most word processing programs must wait for a "page clear" signal and a new "print page" command from the computer's keyboard before the next page begins to print.

You can buy printer buffers separately but it's nice to be able to have one already installed in your printer. One printer, the DTC StyleWriter, has a very generous 32K buffer. This will allow you to store and print about 20 pages off-line from the computer. This printer can be ordered with an optional expanded buffer memory of 67K for

an added \$49—an excellent value. Separately purchased memory buffers of similar size can easily cost you over \$200.

Do you need to address envelopes? This is an important factor to consider when shopping for a printer. If you already have a good typewriter with a common typeface, then your envelope addressing problem is solved. Use your typewriter. You will find it bothersome to use a standard printer for this simple task. Each address must be created as a separate file, formatted to print correctly on the envelope, saved, printed, and finally deleted from your disk. Envelopes are a dreaded nuisance.

One other way to solve the envelope problem is to use an interfaced electronic typewriter, such as the Bytewriter, or Smith-Corona's Messenger III with its optional interface. Put your old typewriter in a garage sale and invest in one of these new daisywheel electronic models. They print at about 10 to 12 characters per second—slow by dot-matrix standards, but still 140 words per minute.

Another option is to buy one of the printers that has an optional keyboard, such as the Comriter CR-II, Brother HR-15 or the Dynax DX-15. These three printers are essentially similar. The keyboard looks like a typewriter keyboard with about 46 keys. Printer input is readily switchable from keyboard output (for those pesky envelopes) to printing from your Apple and vice versa. This typewriter input keyboard is detached and can be used some distance from the printer. The



The BMC PB 101.

keyboard weighs slightly over two pounds and can be held in the lap for comfort and convenience. Now, all we Apple owners could hope for is for some genius out there to make the keyboard switchable to the computer. A detached keyboard for the computer and for the printer—Apple owners want everything, don't we?

Even without this dreamed-about ability to use the optional printer keyboard for computer data entry, this printer-keyboard combination might be a very good choice if yours is a small business and has the need for both a printer and typewriter. Both functions are available for about \$800 list.

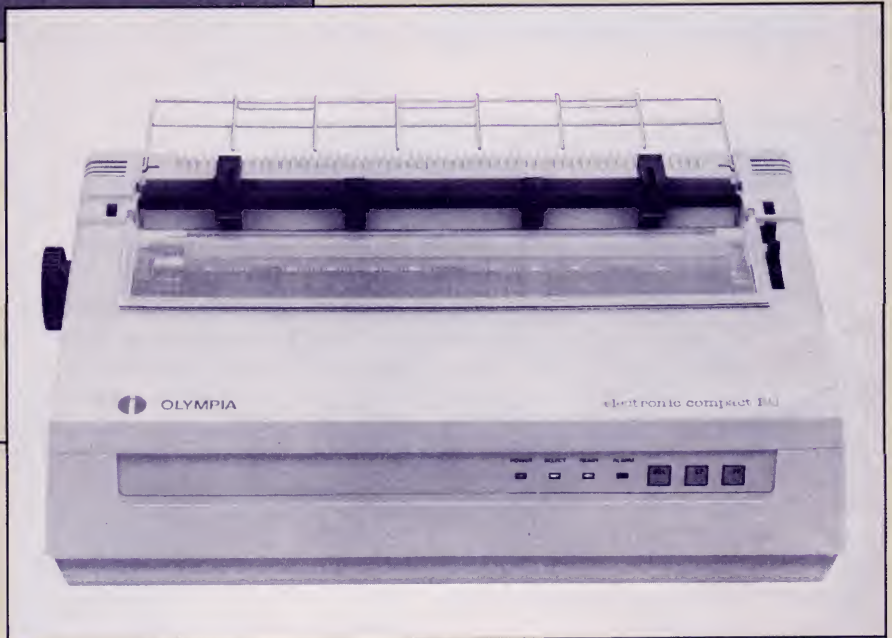
Pitch is another factor. Pitch is the width of the letter: Pica type is 10 characters per inch, elite is 12 characters per inch. Can you be happy with a single pitch? The visual effect can be quite dramatic to change pitch when printing a document. It will help give a professional "typeset" appearance. A few of the printers listed have only a single pitch or must be purchased in a single fixed pitch option. It may mean nothing to you to be able to change type width or pitch from one document to the next or even within the same document, but it's a factor that must be determined before you buy.

Proportional spacing is another feature available on quite a few of the letter-quality printers that can be purchased for under \$1000. Proportional spacing uses special printwheels that give a wider spacing to certain letters like *m* and *w*. These letters are naturally wider than *i* or *l*, for instance, yet



The TTX-1014 by Teletex Communications Corp.

The Olympia Electronic Compact RO.



The Dynax DX-15.

are reserved the same amount of space unless proportional spacing is used. Proportional spacing will put the same amount of space between letters regardless of the actual letter width. Be sure, though, that your word processing software can support this feature. Many of the programs which run on an unmodified Apple do not include proportional spacing control.

What does proportional spacing do for you? Well, it allows you to print out letters, price sheets, data bulletins, and similar documents with a "typeset" look. Using your printer's proportional spacing will give a professionally printed appearance to your work. If you're going to have 5000 copies of your new catalog or brochure printed at your local printshop, simply print it out in proportional spacing, take this "camera ready" copy to your local printing shop, and have it run off. Your computer's printer will have done your typesetting for you.

Interfacing is another problem. Many of the low-cost printers come with a Centronics parallel interface as standard. An RS-232C serial interface is often extra. If you plan on changing

computers in the future, you might want to purchase one of the printers having both types of interface included as standard original equipment. The Teletex TTX-1014, Olympia Electronic Compact RO and the Smith-Corona models have both types of interface as standard equipment.

Another important factor in choosing a letter-quality printer is the paper feed mechanism that you will be using. Often, a letter-quality printer is used with letterhead and other forms of single sheet stationery. Will you be using single sheet paper or tractor-feed paper? If you plan to use both or if there is any chance that you may change your mind later, then opt for one of the models that have optional paper feed equipment available that will fill your future needs. This will be particularly important if you have a small to medium sized business. At first, you may get along with feeding single sheets of letterhead into your printer.

Later, when volume increases, you may wish to switch to pre-printed tractor-fed letterhead or add an automatic sheet feeder to handle the feeding operation all by itself. In the day-to-day operation of your printer, you may be better off having tractor-fed continuous-form paper on a slower speed printer rather than a higher speed sheet-fed printer. Speed is speed, whether it is in the printer speed or in the paper manipulation.

You may not want to purchase these options now but, if they will ever be important in the future, it's best to buy a printer that has these options. Many do have them, but some don't. Think ahead here because it will influence the future usefulness of the printer you now purchase.

Two printers, the TTX-1014 and the Olympia, give you both feed mechanisms—friction and tractor. It makes the decision process a little easier and simplifies the change-over

Manufacturers

from sheet to continuous form paper and back.

The weight of the printer is another factor that could be important. The overall weight of the printer is a general indicator of the ruggedness of the mechanism. It certainly isn't a fool-proof guide, but you will see that the more costly printers are the heavier ones. There are two categories of low-cost daisywheel printers that are easily distinguished by weight, printing speed and price. Each of these factors is related.

The lower cost range of printers sell for about \$500 to \$650, weigh about 20 pounds and print at around 12 characters per second. Many of these do not have optional tractor feed mechanisms available. The higher cost range printers sell for \$700 to \$1,000, weigh 30-35 pounds, and print at around 18 characters per second. Both ranges of printers have generally good reliability. Printers are partly mechanical, so reliability and ruggedness is important. These printers have an MTBF (mean time before failure) of over 2000 hours of printing at a 25% duty or usage rate.

BMC
16830 So. Avalon Blvd.
Carson, CA 90746
(800) 752-5002

Brother International Corp.
8 Corporate Place
Piscataway, NJ 08854
(201) 981-0300

Bytewriter
125 Northview Road
Ithaca, NY 14850
(607) 272-1132

Cardco Inc.
313 Mathewson
Wichita, KS 67214
(316) 267-6525

Comrex International Inc.
3701 Skypark Drive
Suite 120
Torrance, CA 90505
(213) 373-0280

Data Terminals & Communications
590 Division St.
Campbell, CA 95008
(800) 962-8185 (outside California)
(800) 538-9294 (California)

Dynax Inc.
15698 Bandini Blvd.
Bell, CA 90201
(213) 260-7121

Juki Industries of America Inc.
229 Market St.
Saddle Brook, NJ 07662
(201) 368-3666

Olympia USA Inc.
Box 22
Somerville, NJ 08876
(201) 722-7000

Sanyo Business Systems Corp.
51 Joseph St.
Moonachie, NJ 07074
(201) 440-9300

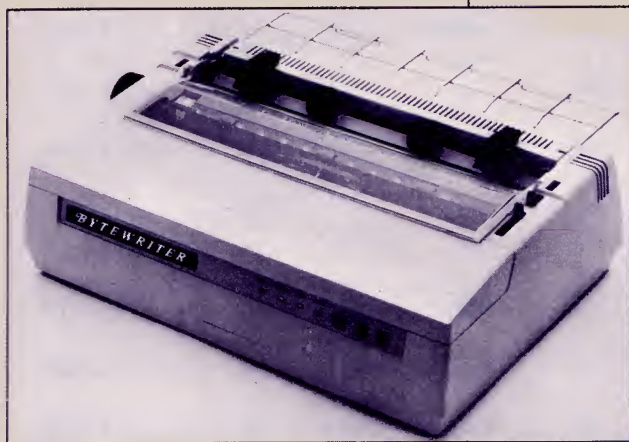
Silver-Reed America Inc.
19600 So. Vermont Ave.
Torrance, CA 90502
(800) 421-4191 (outside California)
(213) 837-6104 (California)

Smith-Corona Consumer Products
65 Locust St.
New Canaan, CT 06840
(203) 972-1471

Star Micronics Inc.
Box 612186
Dallas/Fort Worth Airport, TX 75261
(214) 456-0052

Teletex Communications Corp.
3420 East Third Ave.
Foster City, CA 94404
(415) 341-1330

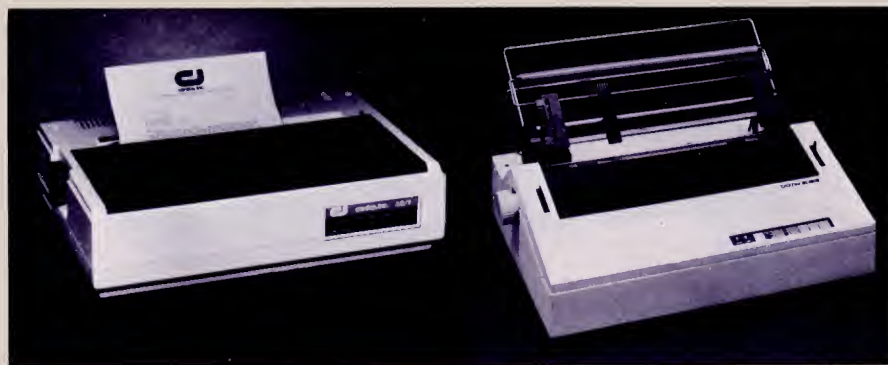
Transtar Computer Products Inc.
Box C-96975
Bellevue, WA 98009
(206) 454-9250



The Bytewriter 900.



The Bytewriter 40.



The Cardco LQ/1 (left).

The Brother HR-25 (right).

Even though your printer will be a reliable piece of equipment, you may wish to purchase from a local dealer

and forgo the extra 10 to 20 percent savings you could have by purchasing through the mail. Mail order houses,

especially for novice computer owners, are often short on advice and less than totally responsive to after-the-sale problems. There are, however, a lot of satisfied mail-order buyers, including me. The savings were more important and I had looked into most of the potential interfacing problems already. The mail-order dealer I purchased from was in the same state, so there

PRINTER	List Price, dollars	Speed, cps	Paper Width, inches	PAPER FEED MECHANISM			Memory Buffer, K	Type Spacing, per inch
				Friction	Tractor	Sheet		
Bytewriter 35	545	10-12	13	Std.	—	—	—	10, 12, 15
Bytewriter 40	645	10-12	13	Std.	—	—	—	10, 12, 15
Bytewriter 900	649	12-14	13.2	Std.	Std.	—	—	10, 12, 15
Smith-Corona Memory Correct III Messenger with Interface Module	769	12	12	Std.	—	—	—	10, 12, 15
Smith-Corona TP-II	595	12	13	Std.	\$149	—	—	10 or 12
Silver-Reed EXP-500	599	12	13	Std.	\$149	—	—	10, 12, 15
Silver-Reed EXP-550	699	17	13.2	Std.	\$160	—	—	10, 12, 15, P
Transtar 120	550	14	12	Std.	\$149	—	2K*	10, 12, 15
Transtar 130	699	18	17	Std.	\$149	—	2K*	10, 12, 15, P
Star Powertype	499	18	8.5	Std.	available soon	—	—	10, 12, 15, P
BMC PB 101	699	17	14	Std.	—	—	—	10, 12, 15, P
BMC PB 401	849	17	14	Std.	—	—	—	10, 12, 15, P
Sanyo PR 5000	595	14	13	Std.	—	—	—	10, 12, 15,
Sanyo 5500	995	16	17	Std.	\$199	—	—	10, 12, 15, P
Comrex ComRiter CR-II	599	12	13.5	Std.	\$120	\$259	5K	10, 12, 15, P
Comrex ComRiter CR-III	995	23	14.9	Std.	\$149	\$269	5K	10, 12, 15, P
DTC StyleWriter Special	639	12	13.5	Std.	\$149	\$335	3K	10, 12, 15, P
DTC StyleWriter	899	12	13.5	Std.	\$149	\$335	35K	10, 12, 15, P
Dynax DX-15	599	13	13.5	Std.	\$120	\$250	3K	10, 12, 15, P
Teletex TTX-1014	649	12	14.5	Std.	Std.	—	—	10, 12, 15
Olympia Electronic Compact RO	649	14	14.4	Std.	Std.	—	—	10, 12, 15
Juki 6100	599	18	13	Std.	\$149	available soon	2K	10, 12, 15, P
Brother HR-25	995	23	16.5	Std.	\$150	\$270	3K	10, 12, 15, P
Cardco LQ/1	650	14	13	Std.	available	available	—	10, 12, 15

*on serial model only



wasn't complete isolation.

You're probably wondering which printer I bought. I invested in the ComRiter CR-II/Brother HR-15/Dynax DX-15 (I said they were similar. They are.) daisywheel printer and keyboard. This printer suits my current needs and should be suitable for the future, too.

Your printer needs will probably

be different from mine. With so many fine low-cost letter-quality printers available, you have a wide

range to choose from no matter what your pocketbook dictates. Happy shopping. ■

Characters per Printwheel	Directional	INTERFACE		Keyboard	Size, inches			Weight, pounds	Comments
		Centronics Parallel	RS-232C Serial		W	H	D		
100	Uni-	Std.	—	Incl.	16.5	4.3	13.7	21†	Doubles as an electronic typewriter (Olivetti Praxis).
100	Uni-	Std.	—	Incl.	18.7	5.3	15	19.4	Doubles as an electronic typewriter (Olivetti Praxis).
100	Bi-	Std.	Std.	—	18.2	5.2	12.2	20	
88	Uni-	Std.	Std.	Incl.	18.5	5.5	15	21.6	Doubles as an electronic typewriter.
93	Uni-	Std.	Std.	—	19.5	6.4	12.4	18.5	
96	Bi-	Std.	\$50	—	17.5	4.8	11.9	18.7	Uses Olivetti ribbon and Silver-Reed printwheels.
96	Bi-	Std.	\$100	—	21	7	15	30.9	Uses Olivetti ribbon and Silver-Reed printwheels.
96	Bi-	Std.	Opt.	—	17.5	4.8	11.9	18.6	Uses Olivetti ribbon and Silver-Reed printwheels.
96	Bi-	Std.	Opt.	—	23	7.5	14	31	Uses Olivetti ribbon and Silver-Reed printwheels.
96	Bi-	Std.	Std.	—	19.6	5.5	14.3	22	Uses Qume printwheels.
96	Bi-	Std.	Opt.	—	22.4	6.7	14.1	35	Uses IBM Selectric ribbon and Brother printwheels.
96	Bi-	Std.	—	—	22.9	7.8	14.9	30.9	Uses Olivetti ribbon and Silver-Reed printwheels.
96	Bi-	Std.	—	—	17.5	4.8	12.4	18.7	
96	Bi-	Std.	—	—	22.9	7.8	14.9	30.9	Uses Olivetti ribbon and Silver-Reed printwheels.
96	Bi-	Std.	\$50	\$199	18.3	6.5	13.3	20	2-color printing. Uses IBM Selectric ribbon and Brother printwheels.
96	Bi-	Std.	\$50	—	20.5	7.6	15	30	2-color printing. Uses IBM Selectric ribbon and Brother printwheels.
96	Bi-	Std.	—	—	13.1	4.7	9.6	25	
96	Bi-	Std.	—	—	13.1	4.7	9.6	25	2-color printing.
96	Bi-	Std.	\$50	\$195	18.3	6.5	13	19.6	2-color printing. Uses IBM Selectric ribbon and Brother printwheels.
100	Bi-	Std.	Std.	—	18.3	5.3	12.3	22	
100	Bi-	Std.	Std.	—	19.5	6.3	12.6	17	
100	Bi-	Std.	\$80	—	20.5	5.9	17.9	31	Uses IBM Selectric ribbon and Triumph-Adler printwheels.
96	Bi-	Std.	\$50	—	21	7.4	15	30.2	2-color printing.
96	Bi-	Std.	Opt.	—	17.5	4.8	12.4	18.7	

†Includes carrying case

inCider... your integrated approach to Apple computing.

Having all the essential hardware and software does not necessarily add up to a complete home Apple* system. To make your system whole, you need information to guide you through the complexities of home computing. **inCider** will pull it all together for you.

Interactions gives you fun programs to introduce your children to computing.

Business Software is head to head software evaluations for your business applications.

The Applesoft Adviser guides you step-by-step through Basic, so you'll program better.

The Apple Clinic saves you money with answers to your maintenance and repair questions.

Hard-hitting reviews help you make every purchase a sound investment.

Plus, you'll get the latest games... new product descriptions... utilities... hardware projects... and programming tips.

**Subscribe today and you'll
get a 13th issue FREE.**

One year of **inCider**... twelve big issues... is only \$24.97. That's a savings of 30% off the newsstand price. Now you can save even more. Just fill out the coupon and return it today with payment enclosed (or charge it on your Mastercard, Visa, or American Express). We'll add a 13th issue to your subscription at no charge.

To get your first issue faster, call toll free:

1 (800) 258-5473

(In New Hampshire, call 1-924-9471).

Your money-back guarantee: You can cancel your subscription at any time. We'll reimburse you for all undelivered issues—no questions asked.

Apple is a registered trademark of Apple Computer Inc.



YES! I want to accomplish more. Send me 12 issues of **inCider** for \$24.97. I understand that with payment enclosed or credit card order I will receive a FREE issue, making a total of 13 issues for \$24.97.

☐ CHECK/MO ☐ MC ☐ VISA ☐ AE ☐ Bill me \$24.97 for 12 issues

Card # _____ Exp. date _____

Signature _____

Name _____

Address _____

City _____ State _____ Zip _____

Canada and Mexico \$27.97, 1 year only, US funds drawn on US bank. Foreign surface \$44.97, 1 year only, US funds drawn on US bank. Please allow 6-8 weeks for delivery. Foreign airmail please inquire.

inCider • PO Box 911 • Farmingdale, NY 11737

346F5

ATARISOFT.TM

All the hits your Apple is missing.

If you thought you'd never find fun games for your hardworking Apple, happy days are here. Because now ATARISOFT brings you great arcade hits never before seen on your Apple screen.

Pick from Pac-Man,¹ Donkey Kong² by Nintendo,² Centipede,TM Defender,³ Joust,³ Jungle Hunt,⁴ Moon Patrol,³ Pole Position,⁵ Galaxian,¹ Ms. Pac-Man,¹ and Battlezone.TM

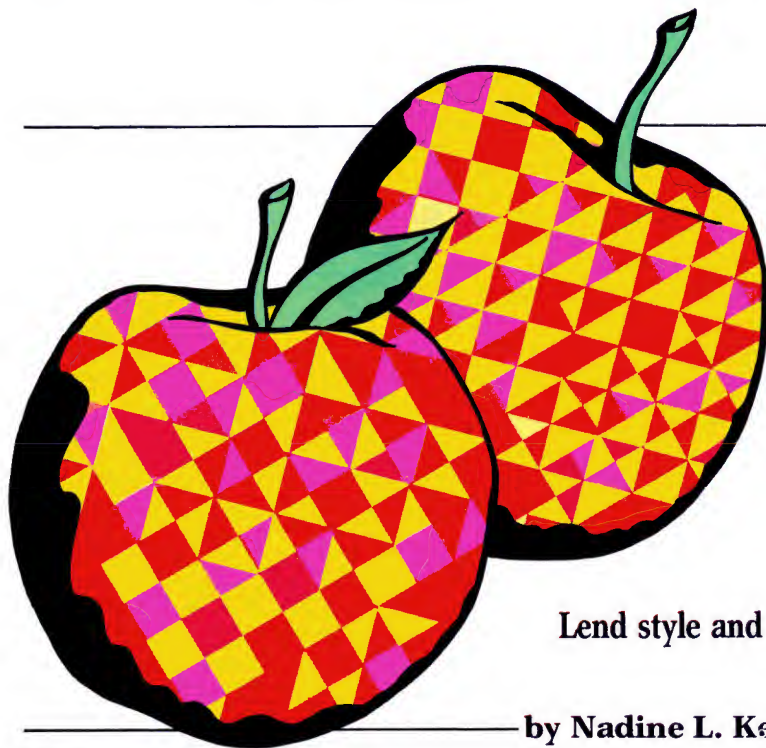
So dust off your joystick (or if you don't have a stick, you can play with a flick of your fingers on your keyboard) and ask your dealer for all the ATARISOFT hits. The software your hardware's been waiting for.

Apple is a registered trademark of Apple Computer, Inc. This software is manufactured by ATARI, Inc. for use on the Apple II computer and is not made, sponsored, authorized or approved by Apple Computer, Inc. 1. Trademarks of Bally Mfg. Co. Sublicensed to ATARI, Inc. by Namco-America, Inc. 2. Trademarks and © Nintendo 1981, 1983. 3. Trademarks and © Williams 1980, 1982, manufactured under license from Williams Electronics. 4. Trademark and © of Taito America Corporation 1982. 5. Engineered and designed by Namco Ltd., manufactured under license by ATARI Inc. Trademark and © Namco 1982. Atari® A Warner Communications Co. © 1984 ATARI Inc. All rights reserved.



Circle 137 on Reader Service card.





Apple Writer Patchwork

Lend style and panache to your Okidata printouts.

by Nadine L. Keilholz

I suspect that I'm not the only Apple owner who uses the computer as a word processor the great majority of the time. I use the Apple Writer II program in my work as a free-lance writer, in volunteer work I do for local civic organizations, and for all my personal and business correspondence. Having grown accustomed to this particular word processing program, I would, in the words of an old commercial, "rather fight than switch."

Until recently I used an Okidata Microline 80 printer. It was a little workhorse, turning out page after page of copy—reliably, but without imagination. It printed in "data processing quality," which meant that everything I wrote was obviously a computer printout. It lacked such features as the ability to print in correspondence quality or boldface, the capacity for superscripting, subscripting and underlining—in other words, all the features necessary for me to produce camera-ready copy.

When I was ready to replace it with a more sophisticated model, I decided, on the basis of the Microline 80's performance and reliability, to stay with an Okidata printer. On examining their literature I found that the Microline 92 was not only within my budget, but also contained all the features I needed and more.

I bought the printer and carried it home in a state of euphoria. The sales-

man had assured me that it was compatible with my Apple II Plus, my Ty-mac printer interface and my Videx Videoterm 80-column board. All I had to do was plug it in and I'd be producing perfect copy in any of several sizes and styles of print—right?

Wrong!

Oh, the salesman had been right about the printer's compatibility with my computer and interface, and it worked perfectly from within an Applesoft program, producing all those beautiful effects for which I'd bought it. But using it with the Apple Writer II was a different story.

The printer, you see, requires control characters to make it produce all those neat little effects, and the Apple Writer II has no provision to type in certain of the needed control characters directly from the keyboard. So there I was with a word processor I liked and was comfortable with and a printer that would do everything I wanted a printer to do—and no way to make the two of them work together!

I don't know what other people do in this situation, but I did what I always do when I run into a computer-related problem I can't handle. I called my son, who is a programmer, and hollered "Help!"

As usual, he came up with the perfect solution.

One of the nicest features of the Apple Writer II is the glossary. The glos-

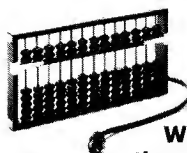
sary is something you can make up yourself—a sort of dictionary of words or characters you use frequently—and load into the computer. It can be made up of words, names or phrases. From then on every time you want to use one of those words, names or phrases all you have to do is type control-G and an identifying character, and the word processor takes over from there, inserting the sequence of characters you have selected.

It is usually used to store hard-to-type character sequences. The Apple Writer II manual uses as an example the name Phineas Q. Phlagel, Inc. If you had to type that several dozen times a day, you, too, would appreciate being able to store it in a glossary so you could simply type control-GP to have it magically appear, complete and properly spelled, in your copy.

But with a little help from the Applesoft program my son designed for me, I can also store in the glossary the control characters needed to make my Microline 92 do all the beautiful things it was designed to do. Now when I want correspondence quality print, all I do is preface my writing with a control-G and a C. To begin underlining I simply follow the control-G with the

Please address correspondence to Nadine L. Keilholz, PO Box 654, Fort Meade, FL 33841.

The portable computer you expected from Apple.

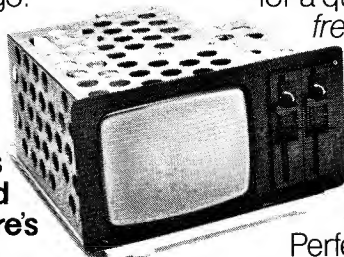


We don't know why they never built one. But we know why we built the Abacus Portable.

We built it because we recognized the pure logic of an Apple and CP/M compatible that wasn't deskbound. Chances are, you have, too. Especially if you're already using an Apple. The Abacus Portable runs all the same software and peripherals. It runs them just as well. And it will do something your Apple can't do. It will go wherever you go.

With a price starting at \$1795, portability alone makes Abacus an unexpected value. But there's more. Abacus

includes quality features found in the world's finest portables. There's a 9-inch amber monitor. A detachable keyboard



with true upper and lower case, auto repeat and 40 function keys. 80K RAM. Choice of one or two half-height disk drives. And a rugged aluminum case. You'll find features like these on the world's finest computers. That's why you'll find them on the Abacus Portable. We've also included the Magic software collection from ArtSci. That's over \$700 worth of word processor, spelling dictionary, spread sheet and data base. It's quality software for a quality computer. And it's free with the Abacus

Portable. If you want more, check out our Abacus Perfect 80 option. It includes Perfect Writer, Perfect Speller, Perfect Calc and Perfect Filer... the hottest software around... plus an Advanced Logic Systems 80

column card. Add it up and you've got well over \$2000 worth. Buy an Abacus Portable and the Perfect 80 package is yours for just \$299.

You can expect to stay with Abacus for a long time. That's because we designed Abacus to grow and change with your computing needs. You can start with a single disk drive and add your second drive later. You can begin with Apple and CP/M software and add our PCMate IBM compatibility upgrade. And the Abacus Portable is part of a complete line of quality hardware

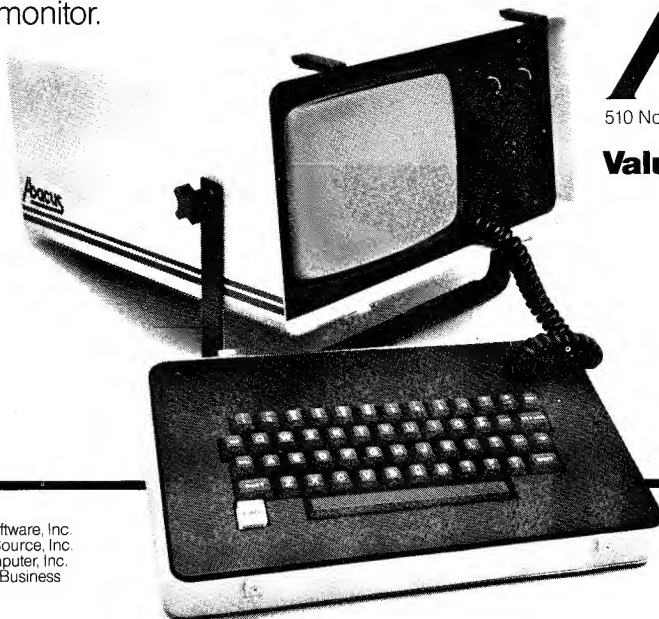
and software that also includes the fully compatible Abacus desktop. You see, we don't just build Abacus computers to meet your needs. We build them to live up to your expectations.

To order the Abacus Portable, call collect (612) 340-1468 9AM-5PM CST for the name of your nearest Abacus dealer.

Abacus™

510 No. First Ave., Suite 408, Mpls., MN 55403

Value that computes.



Circle 501 on Reader Service card.

Magic is a registered trademark of ArtSci, Inc.
Perfect is a registered trademark of Perfect Software, Inc.
PCMate is a registered trademark of CompuSource, Inc.
Apple is a registered trademark of Apple Computer, Inc.
IBM is a registered trademark of International Business Machines Corporation.


```

1 REM *****
2 REM * PRINTER CONTROL CODE GLOSSARY CREATOR *
3 REM * FOR USE WITH APPLE WRITER II          *
4 REM * BY STEPHEN G. KEILHOLZ                *
5 REM * 229 LORRAINE DRIVE, APT. 103          *
6 REM * ALTAMONTE SPRINGS, FL 32714          *
7 REM *****
10 DIM A$(40),C(13): REM NO MORE THAN 40 GLOSSARY ENTRIES OF NO MORE THAN 13 CHARACTER
CODES EACH
20 DS = CHR$(4)
30 TEXT : HOME : PRINT "  APPLEWRITER II GLOSSARY GENERATOR"
40 VTAB 5: INPUT "FILENAME FOR GLOSSARY? ";FS
50 VTAB 5: HTAB 1: PRINT "CREATE A NEW GLOSSARY OR APPEND ENTRIES TO AN OLD ONE <N,O>? ";
GET GS: IF GS < > "N" AND GS < > "O" THEN 50
60 REM NO CHECKING FOR VALIDITY ON FILENAME
70 I = 0
200 VTAB 4: HTAB 1: PRINT "NO. OF NEW ENTRIES: ";I: VTAB 5: HTAB 1: CALL 64578: REM CLEAR
TO END OF SCREEN
210 VTAB 6: PRINT "<RETURN> TO END GLOSSARY ENTRIES."
220 VTAB 5: PRINT "GLOSSARY ACCESS CHARACTER: "; GET AS: PRINT AS: CALL 64578
230 IF AS = CHR$(13) THEN 1410: REM END ENTRIES
240 PRINT : IF AS < "A" OR AS > "Z" THEN BS = "U": GOTO 400
250 PRINT "TYPE 'U' FOR UPPER CASE OR: PRINT "      'L' FOR LOWER CASE"
260 VTAB 6: HTAB 22: PRINT "CASE: "; GET BS: IF BS < > "U" AND BS < > "L" THEN 260
270 PRINT BS: CALL 64578
280 IF BS = "L" THEN PRINT "OWER"
290 IF BS = "U" THEN PRINT "PPER"
400 PRINT ":"
410 PRINT "TYPE THE DECIMAL NUMBERS FOR THE CODES  THAT YOU WANT TO ENTER IN THE
GLOSSARY."
420 PRINT "SEPARATE NUMBERS WITH SPACES.": PRINT "FOR EXAMPLE  :27 70 54 54"
430 VTAB 7: PRINT " ": CALL 64666: INPUT " ";CS
440 IF CS = "" THEN 430
600 FOR J = 1 TO LEN (CS)
610 A = ASC ( MID$(CS,J,1)): IF A = 32 OR (A > 47 AND A < 58) THEN NEXT J: GOTO 800
620 GOTO 430: REM BAD CHARACTER IN STRING
800 CALL 64578
810 VTAB 15: HTAB 3: PRINT "IS THE ABOVE ENTRY CORRECT <Y,N>? "; GET ES: IF ES < > "Y"
AND ES < > "N" THEN 810
820 IF ES = "N" THEN 200
1000 SP = 1: K = 0: REM STARTING POSITION FOR FIRST NUMBER AND NUMBER OF NUMBERS
1010 CS = CS + " ": REM ADD SPACE FOR SCANNING ROUTINE
1020 FOR J = 1 TO LEN (CS)
1030 IF MID$(CS,J,1) < > " " THEN 1070
1040 V = VAL ( MID$(CS,SP,J - SP)): REM VALUE COMES FROM THE CHARACTERS STARTING AT THE
STARTING POSITION AND GOING TO THE CURRENT CHARACTER (WHICH IS A SPACE.)
1050 K = K + 1: C(K) = V: REM STORE CHARACTER
1060 SP = J: REM NEW STARTING POSITION
1070 NEXT J
1200 I = I + 1: REM BEGIN CONSTRUCTION OF NEXT GLOSSARY STRING
1210 A$(I) = CHR$( ASC (AS) + (32 * (BS = "L")))
1220 REM IF BS IS EQUAL TO "L" THEN THE EXPRESSION (32 * (BS = "L")) WILL EVALUATE TO 32,
OTHERWISE (IF BS="U") THE EXPRESSION EVALUATES TO 0 (ZERO.)

```

Program listing.
Program for creation of
printer control code glossary.
(Written by Stephen G. Keilholz)

letter U and to stop underlining I insert the control-G again, followed by S.

I have stored in a single glossary similar commands for all the other things I might want my printer to do—horizontal and vertical emphasis, boldface print (a combination of the two), superscript, subscript, double-wide print, 6 or 8 lines per inch, and the three basic print sizes available—and switching from one to another is simply a matter of pressing a couple of keys.

The program is user-friendly—around here we call it “so simple even Mom can use it!”—with written directions for each procedure appearing on the screen. The most important thing to remember is that you must use the decimal equivalents of the control characters (not the hexadecimal) in compiling the file. The decimal equivalents can be found in a chart in the back of the user’s manual for Okidata printers, and I imagine manuals for other brands contain the same information. (I might note here that there are some errors in the control character chart in the manual for the Okidata 92, and you must be sure to check the addendum for corrections.)

Once you have made up your file of control characters, it needs only to be called up each time you use the Apple Writer, using the usual Control-Q and selection number 5 from the menu.

Since only one glossary may be resident in the Apple Writer at a time, you may, if you normally use a glossary, simply append your usual glossary definitions to the end of your printer glossary to make one file of them. This can be done easily by entering the printer command glossary into the text editor (using the control-L rather than control-Q). Add your other glossary listings, then re-save the file using the same name. Although the program limits the number of glossary entries to 40, each with no more than 13 characters, this limit does not apply when adding glossary entries using the text editor. You must, of course, be sure that your added glossary entries use different identifying characters, and that the total glossary does not exceed the allowed 2048 characters.

The fact that the printer control

NORTHEASTERN SOFTWARE

101 William Henry Drive, Monroe, CT 06468

School Purchase orders Accepted

UP TO
50%
DISCOUNT

SPECIAL DISCOUNTS

Locksmith 5.0.	73.00
Replay II	110.00
Wildcards	Call
E.D.D. (Best Nibble Copier)	68.00
CIA Files (How to Crack)	Call
Back it up III	56.00
CENTRAL POINT Copy II Plus	28.00
Apple Computers	Call

GAMES		HARDWARE		BUSINESS		EDUCATIONAL		HOME/HOBBY	
Program	Our Price	PRINTERS	Our Price	Program	Our Price	Program	Our Price	Program	Our Price
Alpine Encounter	27.50	APPLE		ACTION RESEARCH		APPLE Logo	160.00	BEAGLE	
Centipede	25.00	Apple Dot Matrix	553.00	Zardax	150.00	BPI Speed Read	140.00	Apple Mechanic	20.00
Dig Dug	25.00	Apple Daisy Wheel	1,826.00	APPLE		CBS Software	Call	Beagle Basic	24.00
Starcross	26.00	BROTHER HR 25	775.00	Apple Writer IIe	160.00	COUNTERPOINT SOFTWARE		Disk Quick	22.00
Suspended	33.00	DIABLO		Quick File IIe	80.00	Early Games For Young Children	22.00	Doss Boss	16.00
Zork I, II, III	25.00			ARTSCI		Fraction Factory	22.00	Double Take	24.00
Witness	33.00	620	850.00	Magic Calc	95.00	DAVIDSON AND ASSOCIATES		Flex Type	20.00
Deadline	33.00	630	1,625.00	Magic Window II	95.00	Word Attack	37.00	Frame Up	20.00
Planetfall	33.00	DYNAX		ARTWORKS Magic List 3.0	23.00	Math Blaster	37.00	G P L E	37.00
Enchanter	33.00	DX-15	450.00	BPI General Accounting	298.00	Speed Reader II	52.00	Pronto Doss	20.00
Infidel	33.00	EPSON		BUSINESS SOLUTIONS		DESIGNWARE		Silicon Salad	17.00
Ultima III (Exodus)	39.00	FX-80	550.00	Incredible Jack	115.00	Crypto Cube	30.00	Typefaces	15.00
Caverns of Callisto	26.00	FX-100	685.00	COMPUTER TAX SERVICE		Creature Creator	30.00	Utility City	15.00
Lode Runner	24.00	MX-100	550.00	Money Street	78.00	Spellcopier	30.00	BRODERBUND	
Choplifter	24.00	IDS		CONTINENTAL SOFTWARE		DLM		Bank Street Writer	47.00
Drol	23.00	Prism 80 (Basic)	1,080.00	The Home Accountant	48.00	Alien Addition	24.00	Bank Street Speller	48.00
Spare Change	30.00	Prism 80 (Full)	1,385.00	The Tax Advantage	45.00	Medior Multiplication	24.00	CHALKBOARD	
Maze Craze	30.00	Prism 132 (Basic)	1,240.00	FCM/FL	65.00	Demolition Division	24.00	Power Pad	81.50
Eagles	26.00	Prism 132 (Full)	1,675.00	F.A.S.T.	67.00	Alligator Mix	24.00	Starter Kit	45.00
Queen of Hearts	26.00	Microprim	550.00	DICKENS DATA SYSTEMS		Dragon Mix	24.00	DATA TRANSFORMS	50.00
Fortress	30.00	JUKI 6100	450.00	The Wall Street Plotter	94.00	EDU-WARE		DECISION SUPPORT	
Pro Tour Golf	30.00	MANASMAN TALLY		The Super Plotter	53.00	Compu-Read	20.00	The Accountant	95.00
Ring Side Seat	30.00	160L	620.00	DOW JONES SOFTWARE		Compu-Math	34.00	MICROLAB SAT English I	21.65
Cosmic Balance II	29.00	180L	805.00	The Market Analyzer	275.00	SAT Word Attack Skills	34.00	MICROSOFT	
Bomb Alley	41.00	1602P	1,325.00	Market Manager	230.00	PSAT Word Attack Skills	34.00	Applesoft Compiler	126.00
Geopolitique 1990	29.00	OKIDATA		FOX & GELLER Quickcode	189.00	Spelling w/Reading Prmr.	27.00	Typing Tutor II	18.00
Epidemic	29.00	92P	470.00	HAYDEN Pie Writer 2.2	99.00	Algebra 1 2 3 or 4	27.00	MONOMORG Dollars & Sense	72.00
North Atlantic 86	43.00	93P	700.00	HOWARD SOFTWARE SERVICES		Algebra 5 & 6	37.50	PENGUIN Graphics Magician	41.00
Germany 1985	41.00	PROWRITER		Real Estate Analyzer II	160.00	EINSTEIN Memory Trainer	62.00	SOFTONICS Softterm II	140.00
Broadsides	29.00	8510AP (ProWriter I)	365.00	HOWARD W. SAMS		HARCOURT BRACE JOVANOVIH		ROGER WAGNER PUBLISHING	
Flight Simulator I	25.00	1550AP (ProWriter II)	655.00	Financial Facts	47.00	Computer SAT	60.00	Merlin Assembler Pro	54.50
Flight Simulator II	35.00	F-10 (40 cps)	1,125.00	Instant Recall	47.00	HAYDEN SOFTWARE		Merlin Combo Pack	82.00
Night Mission Pinball	25.00	F-10 (55 cps)	1,425.00	KENSINGTON		Micro Division	22.00	The Right Choice	35.00
Wizardry I	33.00	SMITH CARONA TP-1	499.00	Format II Enhanced	105.00	Micro Multiplication	22.00	TURNINGPOINT Time is Money	70.00
Wizardry II (Night of Diamonds)	24.00	STAR MICRONICS		KNOWARE Knoware	72.00	Micro Subtractions	22.00	VIRTUAL COMBINATICS	
Wizardry III (Legacy of Lylgarnyn)	27.00	Gemini 10X	320.00	LIVING VIDEO Think Tank	124.00	Micro Addition	22.00	Micro Cookbook II/Ile	27.50
Police Artist	23.00	Gemini 15X	409.00	MEGAHAUS		LEARNING COMPANY		UNITED SOFTWARE INDUSTRIES	
Wizprint	19.00	Power Type	400.00	MegaFinder	108.00	Rocky's Boots	34.00	ASC II Pro	85.00
Crypt of Medea	23.00	TRANSTAR		MegaSpell	45.00	Gertrudes Puzzles or Secrets	30.00	ACCESSORIES	
Rescue Raiders	23.00	120	440.00	MegaWriter	47.00	Word Spinner	24.00	Program	Our Price
Zaxxon	27.00	130	605.00	MICROPRO		Number Stumper	27.00	CORVUS Hard Disks	Call
Pooyan	23.00	140	1,235.00	Calstar	118.00	Additional Magician	24.00	EPS Keyboard	275.00
Genesis	23.00	315	470.00	Infostar	320.00	Reader Rabbit	27.00	HAYES Apple II:	
Spy's Demise	13.50	Pics Card	96.00	Spellstar	162.00	Magic Spell	24.00	Mach II	31.00
The Spy Strikes Back	13.50	DISK DRIVES		Wordstar W/Z Card	320.00	MICRO LAB		Mach II	38.95
The Quest	13.50	APPLE Apple Add On	350.00	Word/Spell/Mail	540.00	English SAT	22.00	Apple IIe:	
Minit Man	13.50	MICRO SCI		MICROSOFT Multiplan	175.00	Math SAT	22.00	Mach III	35.00
Bouncing Kamangas	13.50	Disk Contr. for A2	75.00	MID WEST SOFTWARE		PROGRAM DESIGN		Mach III	42.95
Coveted Mirror	13.50	Disk Contr. for A40/70	75.00	Write Away	126.00	Vocabulary Builder	18.00	HAYES	
Mr. Cool	30.00	A2	230.00	MUSE Supertext-Pro	70.00	One: Beginning	18.00	Micromodem IIe/w Smart Com I	250.00
Congo Bongo	28.00	A2 w/controller	295.00	PEACHTREE Peach Calc	92.00	Two: Advanced	18.00	KENSINGTON System Saver	65.00
Frogger	24.00	A40	295.00	QUARK		The New Step by Step	65.00	KOALA Koala Pad	90.00
Sammy Light Foot	27.00	A40 w/controller	365.00	Lexicheck/Word Juggler IIe	155.00	Step by Step II	65.00	KRAFT Joystick	40.00
Time Zone	65.00	A70	365.00	Combo		SCARBOROUGH SYSTEMS		MICROSOFT	
Ultima II	41.00	A70 w/controller	445.00	SENSIBLE SOFTWARE		Songwriter	30.00	Ram Card	75.00
The Dark Crystal	27.00	RANA		Bookends	82.00	Picturewriter	30.00	Softcard	238.00
Quest For Tires	26.00	Disk Controller	95.00	Report Card	44.00	Master Type	27.50	NOVATION Apple Cat II	259.00
Super Taxman II	18.00	Elite I	275.00	Sensible Speller	82.00	SIERRA ON—LINE		ORANGE MICRO Grappler +	120.00
Stellar 7	24.00	Elite I w/controller	360.00	SIERRA ON/LINE		Learning with Leeper	24.00	SATURN 128K Board	375.00
Fax	22.00	Elite II	470.00	The Dictionary	65.00	Bop-A-Bet	19.00	SPES LABS	
Jumpman	37.00	Elite II w/controller	535.00	The General Manager II	149.00	Dragons Keep	20.00	Super MX Interface Card	157.00
Eating Machine	37.00	Elite III	590.00	Homeword	37.50	Troll's Tale	20.00	STREET ELECTRONICS Echo II	124.00
Advanced Black Jack	37.00	Elite III w/controller	665.00	Screenwriter IIe	82.00	SPINNAKER SOFTWARE		SWEET MICRO	
Castle Wolfenstein	20.00	MONITORS		SILICON VALLEY		Trains	28.00	Mockingboard w/Speech	155.00
Caverns of Frietag	20.00	AMDEK		The Handlers Package	90.00	Facemaker	23.00	SYNETIX Super Sprite	320.00
Spitfire Simulator	26.00	Color I +	315.00	List Handler	36.00	Snooper Troops 1 & 2	30.00	TG Joystick II/Ile	45.00
Air Sim III	29.00	Color II +	440.00	The Word Handler II	42.00	Story Machine	24.00	Paddles	28.00
Sargon II	25.00	Color III	350.00	SOFTLINK Practical Acct	105.00	Kindercomp	20.00	Select A Port	35.00
Sargon III	37.00	DVM II or DVM III RGB Interface	139.00	SOFTWARE PUBLISHING		Delta Drawing	41.00	TRACKHOUSE Key Pad	150.00
Cubit	29.00	DVM 80E RGB Interface	149.00	PFS: File	82.00	Kids on Keys	21.00	VERA EZ2 Port II	28.00
Miner 2049er	26.00	Amdek 300G Hi-Res	149.00	PFS: Graph	82.50	Alphabet Zoo	20.00	VIDEX	
Dino Eggs	30.00	Amdek 300A Amber	160.00	PFS: School Record Keeper	105.00	SUBLOGIC		Ultratram	295.00
Death in the Caribbean	26.00	NEC 12" Color	299.00	STONEWARE		Whole Brain Spelling	24.00	Videoterm	245.00
Critical Mass	27.00	TAXAN		D B Master Ver. 4	230.00	TERRAPIN Logo	108.00	ZOOM TELEFONICS	
Masquerade	26.00	12" AMBER	135.00	VISICORP		XEROX		Networker	105.00
Bats in the Belfry	20.00	210 Color	299.00	Visicalc 3.3	164.00	Slicky Bear Numbers	27.00	Netmaster	65.00
Mad Rat	16.00	RGB Vision III	450.00	Visiplot	139.00	Slicky Bear ABC	27.00	Combo	145.00
Diamond Mine	22.00	RGB-II Interface	140.00	Visitrend/Visiplot	198.00	Slicky Bear Opposites	27.00	MECA	
Odesta Chess 7.0	23.00					Slicky Bear Shapes	27.00	Managing Your Money	127.00
How about a nice game of Chess	23.00					Slicky Bear Basket Bnc.	27.00	The Running Program	55.00
The Serpent's Star	27.00							MEDIA	
Rendezvous	27.00							Program	Our Price
Titan Empire	24.00							ELEPHANT 5 1/4 SSDS	18.50
Beneath Apple Manor	20.00							MAXELL 5 1/4 SSDS	28.00
I.Q. Baseball	19.00							VERBATIM 5 1/4 SSDS	26.50
Zero Gravity Pinball	20.00								

NO ADDITIONAL CHARGES FOR CREDIT CARD ORDERS



For Fast Delivery send cashier's check, certified check or money order. Personal and company check allow 3 weeks to clear. Shipping - Software (\$2.50 minimum). C.O.D. add an additional \$1.75. Shipping - Hardware (please call). Alaska, Hawaii, Canada, PO, APO and FPO \$5.00 minimum. Foreign orders - \$15.00 minimum and 15% of all orders over \$100. Mastercard & Visa (include card # and expiration date). Connecticut residents add 7.5% sales tax. We ship same day for most orders. Prices subject to change without notice. School purchase orders accepted. All returns must have a return authorization number. Call 203-268-1850 to obtain one before returning goods for replacement.

If something you would like is not listed, just call. If we don't have it, we can get it.

ORDERS ONLY
TOLL FREE - 7 DAYS/WK
1-800-382-2242
For Inquiries and Connecticut Orders Call
(203)268-1850

Listing continued.

```

1230 FOR J = 1 TO K

1240 A$(I) = A$(I) + CHR$(C(J))

1250 NEXT

1260 GOTO 200

1400 REM ALL ENTRIES MADE, NOW SAVE FILE

1410 VTAB 4: HTAB 1: CALL 64578: PRINT : HTAB 14: FLASH : PRINT "WRITING FILE": NORMAL

1420 IF G$ = "O" THEN PRINT D$"APPEND ";F$: GOTO 1460: REM SKIP DELETION OF OLD FILE AND
OPEN TO APPEND

1430 PRINT : PRINT D$"OPEN ";F$

1440 PRINT D$"DELETE ";F$: REM REMOVE OLD FILE WITH SAME NAME

1450 PRINT D$"OPEN ";F$

1460 PRINT D$"WRITE ";F$

1470 FOR J = 1 TO I: PRINT A$(J)

1480 NEXT J

1490 PRINT D$"CLOSE"

1500 VTAB 5: CALL 64578: PRINT "ALL ENTRIES SAVED TO DISK. NOW ENTER APPLEWRITER AND
TEST THE NEW GLOSSARY!"

1510 END
    
```

characters show up on the screen as funny looking symbols and characters is hard to get used to at first. It makes formatting more difficult since, although they are not printed in the final copy, they add to the line length on the screen, and often look more like typographical errors than something that should be there. It's a small price to pay, though, for the printing versatility it allows.

I find the program is the perfect answer to my problem. For all you other Apple Writer II users who may have problems controlling printers from within the word processor, the accompanying program may be your perfect solution, too. ■

Ed. note—Ms. Keilholz was inspired to share her solution with us when she read a query from a reader in the July inCider. This kind of interaction enriches everyone—and we thank both contributors.

Circle 49 on Reader Service card.

MASTER HORSE HANDICAPPER™



EVALUATES FROM RACING FORM!

Age	Gender	Post (Today)
Class	Jockey (Today)	Post (Last)
Condition	Jockey (Last)	Speed
Consistency	Length	Trainer
Earnings	Time of Year	Workouts

And gives you **GRAPHIC REPRESENTATION** of finish

ADAPTS TO ANY TRACK IN THE WORLD

Quickly and easily be changing data statements relating to local track records/jockeys and trainers.
COMPLETE INSTRUCTIONS INCLUDED

TH. Master Thoroughbred Handicapper™

A "Full Featured" Thoroughbred Program for the professional and serious novice. A menu driven program that deals with "all" relevant variables found on the RACING FORM.

MEM 32K

\$99⁹⁵

QH. Master Quarterhorse Program™

Complete Quarterhorse analysis designed for the "close" finishes involved in this type of race. This program is designed around intricate "Speed" ratings but includes all handicapping variables. Complete with instructions.

MEM 32K

\$99⁹⁵

MB. Master Bettor™

NEW

A compliment to ALL Master Handicapper programs, includes: 1) Win/Place/Show 2) Quinella 3) Exacta 4) Trifecta 5) Pick Six 6) Daily Double 7) Money Management 8) Odds Analysis 9) and Much More. A perfect program designed to use results from all Master Programs to generate "best bet"

MEM 16K

\$59⁹⁵

Apple™ is the trademark of Apple Computer, Inc.

NEW

GOLD EDITION

GLD. ENHANCED "GOLD" EDITION™
The ultimate analysis system including everything on Program TH™ plus:

- | | |
|----------------------------|--|
| 1) Daily Track Variance | 4) Distance range 3 furlongs to 1½ miles (1 mi. 70 yds.) |
| 2) Expanded instructions | 5) + + More |
| 3) Enhanced Error Trapping | |

\$159⁹⁵

DA. Master Dog Analysis™

The only professional dog handicapper on the market, includes:

- | | |
|---------------|--------------------|
| 1) Speed | 6) Condition |
| 2) Post Today | 7) Running Style |
| 3) Kennel | 8) Weight |
| 4) Post Lane | 9) plus much more. |
| 5) Distance | |

If you are near a greyhound track, you can't afford not to use this program.

MEM 32K

\$99⁹⁵

Professor Jones' Football Predictor, Prof. Pix

This complete football analysis will predict:

- 1) Overlays
- 2) Point Spreads
- 3) "Superplays"
- 4) "Over/Under" Bets.

For NFL/USL/College. Specify Mod I/III

T — **\$19⁹⁵** D **\$24⁹⁵**

Track Management™

NEW

A revolutionary data base program designed to keep records on "ALL" horses or dogs running at a track. Can also be used to expand Jockey/Trainer stats in all Master Handicapper™ programs. **A MUST FOR THE SERIOUS HANDICAPPER.**

\$69⁹⁵

PROF. JONES' PROFESSIONAL COMPUTER SYSTEM

- A. Apple Soft™ compatible (with Apple File)
- B. CPM™ compatible (includes card)
- C. 64K memory
- D. Disk drive
- E. Drive controller
- F. High resolution monitor (green)
- G. All cables etc.
- H. Your choice of one gambling program by Prof. Jones

Complete **\$1195⁰⁰** (until I run out)
Price

HARDWARE

Disk Drive	\$229 ⁹⁵
Controller	\$59 ⁹⁵
Echo Speech Synthesizer	\$249 ⁹⁵
Echo II	\$139 ⁹⁵
Orange Grappler +	\$149 ⁹⁵
Buffer Board	\$129 ⁹⁵
High Res Monitors	CALL

ENTERTAINMENT

"Saigon, The Final Days"	\$34 ⁹⁵
"Programmers Flight System"	\$45 ⁹⁵

PROGRAMS AVAILABLE FOR

TRS-80 I, III, 4
Apple™ II, II+, IIE
CPM 2.2, 3.0
SOON: MS-DOS MOD 100

WE CARRY

MANY
ITEMS
NOT
LISTED

Send check / money order / VISA / Mastercharge
(Include expiration date) to:

48 HOUR SHIPPING

Call **208-342-6939**
M-F 8-7 MST

Prof. Jones
1114 N. 24th St.
Boise, ID 83702



TERMS: FREE SHIPPING ALL SOFTWARE.
Add \$6.00 hardware / C.O.D. Add \$6.00 / Add 3 weeks personal checks / Add 4.5% ID residents / Add \$6.00 outside U.S.A. / Prices subject to change.

"NEVER LOSE AGAIN"

DEALER INQUIRIES INVITED

COMMITTED TO EXCELLENCE:

OUR COMMITMENT IS YOUR GUARANTEE OF SOFTWARE THAT CHALLENGES, ENTERTAINS, AND INTRIGUES!

The WIZARDRY Phenomenon Continues!



Now, better than ever, the Wizardry adventure continues with LEGACY OF LLYLGAMYN. Cast spells, work your way through a 3-D maze and enjoy the thrill of Wizardry with our newest software innovation--WINDO-WIZARDRY™. Its Lisa-like windows help you play faster and more efficiently than ever before! All the information you'll ever need is at your fingertips' command. SOFTALK's Review Editor, Roe Adams, calls LOL "...an excellent game! It's a landmark in graphics advancement." LEGACY OF LLYLGAMYN is a new world of excitement!

"The Best Yet!"

Margot Comstock Tommervik,
Editor, SOFTALK

SIR-TECH SOFTWARE INC.

TOM SNYDER: INTERVIEW

by Brian Murphy

Tom Snyder is a schoolteacher turned software programmer. A budding computer whiz kid in his early teens, he attracted the attention of IBM with his design for a computer. The prestigious computer firm was so impressed that they sent him more than \$2000 worth of parts to build a prototype—a project he successfully completed.

Surprisingly, Snyder's interest in computers waned during his late teens. He had little involvement with computers or software until he became a teacher. The TRS-80 computer led him to discover that the computer can be a powerful tool in the classroom.

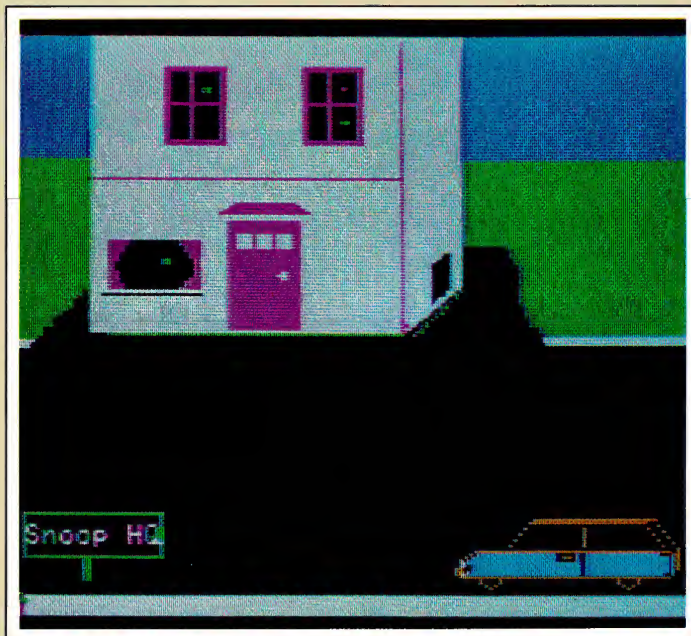
Snyder's games, de-

veloped for his own classroom, drew favorable comments from colleagues and friends. Their confidence led him to the door of Spinnaker Software. His educational games—the "Search" series, Snooper Troops, and In Search of The Most Amazing Thing—won praise from software critics, teachers, and home users.

In a recent conversation with *inCider*, Snyder expounded on his computing background and the philosophy behind his games. He also gave us a sneak pre-



The controversial programming entrepreneur blasts theory and voices his opinions on classroom computing.



view of future productions.

inCider: What first interested you in computers, and how did you become a software author?

Snyder: It was back in junior high school. I became a "computer nerd" for seven years. Now this was back in the '60s before there was any integrated circuitry. I designed a little computer and my parents talked me into sending it to IBM, which was the big giant back then. They actually sent me a couple thousand dollars' worth of parts and said, "Go ahead; build one."

So, I built this enormous digital computer in my basement. Then I put it in a couple of science shows at MIT. I literally forgot it all and got into music and social stuff and never touched (computers) again until 1979, when I walked into Radio Shack and bought a TRS-80 Model I, just out of curiosity.

inCider: How did you use it?

Snyder: I had been a teacher for eight years at the time, and I really did not intend—people don't believe this—to write educational software. I used it in the classroom to play games with the kids and to organize my grading system. The next thing I knew, I was writing simulations that were run by the computer for the whole group, and I was coming up with some pretty bizarre stuff.

People talked me into finding out if it was any good. I hired a consultant from New York City, and paid him to

come up for the day and tell me, unbiased, if there was anything there. He let me know two things. One was that the quality was a lot higher than anything out, and the other thing was that it was a completely different approach. That's when I started a company and started the whole bandwagon.

inCider: Describe how you first approached writing software.

Snyder: I was using simulations. But teachers have been using simulations for a long time without computers, and they are very paper-pencil-3-by-5-card-and-dice intensive. It was an enormous management problem for me.

So, at first I just had the computer helping me manage them, but slowly I realized the computer could be used to

Brian Murphy, a frequent contributor to inCider, resides at 133 Post Road, Fairfield, CT 06430.

pace the simulation. In order to do that, I had to turn around and let the kids push the buttons. Then I discovered some really bizarre ways to use the computer. One was to have the computer call up each group, so at any given time one group was using the computer while the others were sitting around discussing what had happened to them.

There was a constant kind of energy going around the room because the computer was servicing 25 kids, and it was still way ahead of the group. So, they'd be back at their desks, figuring out what had just happened to them and making plans for what to do on their next turn, making maps and exchanging information.

What was happening, however, was that a couple of bright kids in every group were taking over the groups. What I did was put all the information up on the screen in an interesting, graphic way and made it so that the screen was up there only a couple of seconds.

It forced the kids to divide up the responsibilities: "Okay you get the latitude and I'll get the ocean's depth." What happened was that even the quiet, shy kids or kids who weren't really dominant were sucked into the activity. Then they'd all sit down and talk to each other. They'd ask, "What's the ocean's depth?" and whoever had that job would announce it. And just what you would like to see in a class would happen. Some shy kid would say what the ocean's depth was and the other kids would say, "You're kidding! That's not what it was the last time. It's getting shallower. Maybe we're nearer land."

inCider: These materials you used in your classroom, are they available now in a commercial version?

Snyder: Oh, yes. But they're very expensive—a hundred eighty bucks. McGraw-Hill decided to approach this market differently and to put together a big series of notebooks, workbooks, and packages that are sold to the classroom.

inCider: What title are these games published under?



Snyder: "The Search Series." They cover geography—each one is called a "Search"—Geology Search, Community Search, Archaeology Search, and Energy Search. I'm really happy to say that they have been critically acclaimed. They've gotten very high marks.

inCider: Name some other products you're proud about.



Snyder: In Search of the Most Amazing Thing, Fraction Fever, and a lot of the products coming out that you might not have heard about, yet. Agent U.S.A. is one. That is where you travel around the country on trains, going from train station to train station, learning all about the United States while trying to stop the Fuzzbodies. The only way you can stop them is with these crystals. You have to rush around to a hundred different cities, get the train schedules right, and try to cut off the Fuzzbodies.

inCider: Any other titles coming out?

Snyder: Spelldiver. In this game, you're a deep sea diver and you've discovered a word under the water that's hundreds of feet high and hundreds of feet long. You can only see part of a letter at any given time. You have to figure what the word is. It gives kids a new kind of kinesthetic approach to recognizing letters, because they only see a little bit at a time. We have a dictionary of hundreds of commonly misspelled words that you will find underwater.

inCider: Any other titles?

Snyder: Yes, we have Banner Catch, which is a first. It's a simulation of "capture the flag," but it's the only one in which—here's that social element coming back in—you can't play it alone and you can't play it against another person. You have to have another person, and the two of you collaborate against the computer. When kids play it, they're constantly stopping it and talking to each other to figure out strategy.

We also have a game called Run For The Money coming out that's about to have a huge amount of public relations done by Scarborough Systems. It's a business simulation for kids.

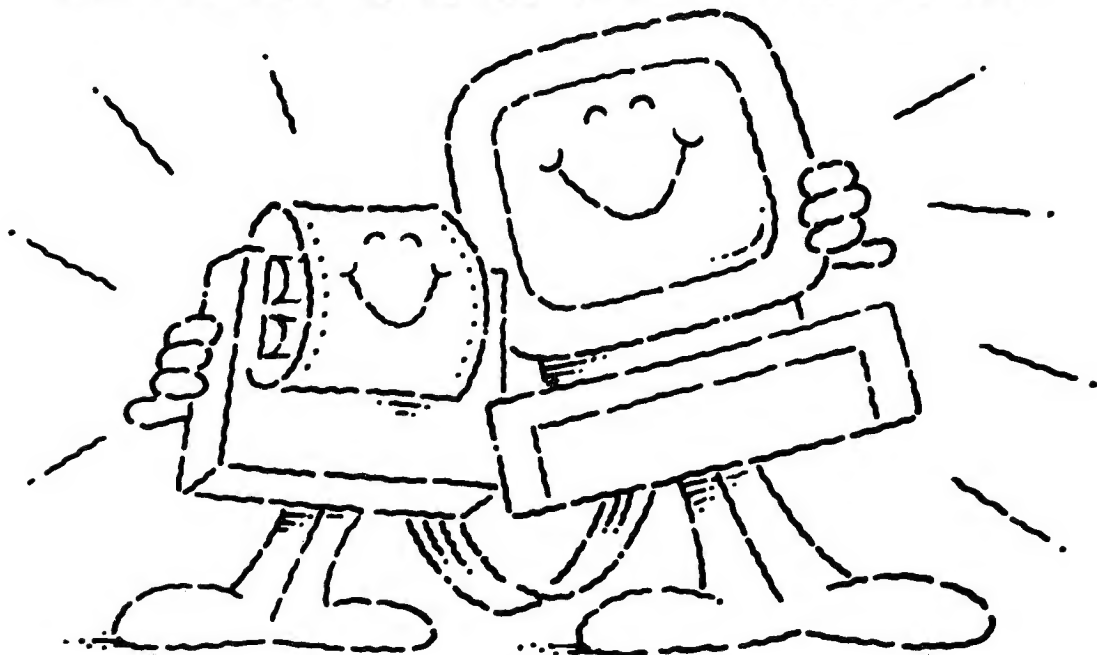
inCider: That's fascinating. What age group is it for?

Snyder: It's for eight to adult, but we have kids in college playing it. What we decided to do was make a business simulation for two kids at a time—you can't play it alone. It's a device where the kids can try out strategies. We have a book of strategies we think are used in the real world, adapted for kids. There are two factories that compete against each other on another planet, and if the factory makes enough money it can blast off and leave the planet!

inCider: Outer space economics that offer a real economic experience...

Snyder: Right. And the kids can try an approach with very high pricing and very high advertising, or they can do very low quality units and very low pricing with very high advertising. We have all the strategies described, and

MEET THE PERIPHERAL MATCHMAKERS.



SCOOTER™ HIGH GRADE CABLE ASSEMBLIES FOR ALL YOUR SYSTEM'S CONNECTION NEEDS.

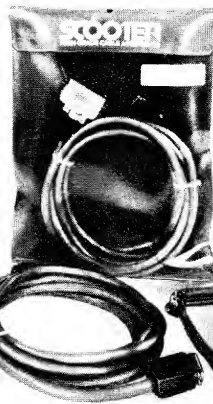
You've just spent weeks, maybe months, matching up the right computer with the right printer with the right monitor.

Now that you've decided, get them all together with the right interface cables: SCOOTER™ High Grade Cable Assemblies.

SCOOTER makes dozens of standard interface cables. And, if you can't find what you need, ask your computer dealer about SCOOTER's custom service. It's surprisingly affordable.

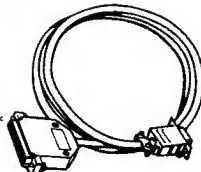
As for quality, SCOOTER tests each and every cable assembly before packaging. And they're just part of a whole line of high grade electronic components and surge-protected outlet strips designed for computers.

Ask for SCOOTER High Grade Cable Assemblies



wherever you buy computer supplies. Because when it comes to peripheral matchmaking, they're matchless.

NEW FROM SCOOTER™ PRINTER CABLE FOR MACINTOSH* COMPUTERS!



SCOOTER gives Mac printers room to move with five and ten-foot high grade interface cables.

5-ft. (MAC925 PP5): **\$22.95**

10-ft. (MAC925 PP10): **\$24.95**

All prices suggested retail.
Visa and MasterCard accepted.

*Macintosh is a registered trademark of Apple Computer Co.

FREE SCOOTER T-SHIRT WITH ANY SCOOTER CABLE ASSEMBLY

Send us your SALES RECEIPT OR your ORDER with this coupon to:
ohm/electronics, 746 Vermont St., Palatine IL 60067
(Illinois residents, when ordering, add 7% sales tax.)

☐ Visa ☐ MasterCard ☐ Check or Money Order

Model #: _____ Price: _____ T-Shirt Size: _____

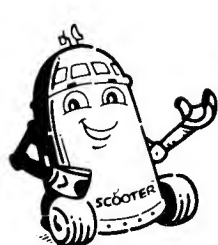
Card #: _____ Exp. Date: _____

Signature: _____

Name: _____

Address: _____

City: _____ State: _____ Zip: _____



SCOOTER™
High Grade Cable Assemblies

ohm/electronics
746 Vermont • Palatine, IL 60067
(312) 359-6040

cessing. They can simulate physical events and they can do data base stuff—and they can play games.

There's something in our computers. They're digital and they're numbers-oriented; they carry an implicit promise that their effects will be quantifiable.

inCider: So you can make an exact measurement of how much the child has learned?

Snyder: Right. But good software, once you're through with it... the effect is going to be as hard to measure as that of a good book.

One of the concepts I love to hate is the idea of teacher-proof or student-proof software—that the software is so good and so complete you can't possibly screw up on it. My point isn't that it's impossible to do; it's probably possible to do. But at the point it's anybody-proof, it's probably not that good. The more it needs intervention from people, the more likely you are to get some real learning taking place.

That's why I'm so excited about the collaborative model taking place in educational software, because when one kid turns to another and tells him what he just did, they're verbalizing; they're theorizing.

inCider: So you feel the interaction between children is more important than the interaction between one kid and the computer?

Snyder: Oh, yes! By all means! I really like the idea of slowing things down and opening them up. I think that *In Search of the Most Amazing Thing* is a bit flawed because it's so lethargic, but the initial goal was to make it a little more like a book. I have kids call me up at night and say they've almost found the Most Amazing Thing.

They're playing the game while they're calling. They have the space to get up and go to the bathroom, make a sandwich, call a friend, call someone in, talk, theorize, read a little of the [game] book while they're flying around... I'm trying to create more space in between the code so that they can do other stuff; so that it becomes part of their lives.

People talk about the concern

that... learning is "context-frozen." What you learn is only in terms of what happens on the screen, and once you walk away it's not with you any more. If you're living with it—talking, reading, writing, getting up, moving around or theorizing—it makes it more a part of your life.

inCider: If you were going to give advice to school administrators and teachers who want to buy educational software with limited resources, what would you say?

Snyder: It's a question of allocation. No school on that level is going to have a million dollars (for computers), so we're going to have limited computers and, therefore, limited computer time.

The most important thing you can do is to get the kids programming. And the best way is with Logo. The second best language is Basic. Now every time you steal those computers to do either drill or practice or individual games... you're probably not allocating your hardware as well as you could. Computer literacy is the most dramatic teaching that's going to go on with the computer.

I would argue that if you want to buy software and not just languages, [get] the kinds of group simulations that really electrify. If your kids are studying colonial America and they play *Geography Search*, they all get to pretend they're looking for the New World. Then you're using the computer not as a primary teaching tool... [but as] an incentive builder so you can do skits around it; the kids can do creative writing based on it; you can apply books you've read about explorers to what happened in the simulation. Remind the administrators that the computer should not substitute a good, effective (non-computer) curriculum.

I disappoint administrators all the time. They've gone out and raised a couple thousand, ten thousand or fifty thousand bucks and say, "What do we buy?" I say, "Don't buy that much!" People go out and buy truck loads of computers and software, but it's very hard to know how to fit it into the school environment.

One of the oddest things that hap-

pens is that the best the school can do is to simulate what happens at home. They have to find a quiet place; let kids be by themselves. And all we're doing is taking home gaming and home exploration and doing it at school! That, to me, isn't the primary value of school. School is a social, cultural experience. To force the school into trying to emulate the home, in order to use computers properly, seems like throwing money in the wrong direction.

inCider: Let's turn to the home scene for a moment. What advice do you have for parents in selecting educational software?

Snyder: Here's a great rule of thumb... Parents should buy what they, themselves, like. And then, what the parents should do is go home and play it. Don't even invite the kid in the room! Don't tell him he can't come in, but play it, get into it, and learn all about it. Then the kid is going to come in, wanting to do stuff with the parents and then the parents can show the kids how to do it.

The parents can't fake it with a stupid program. And therefore, they're not going to communicate with their kids. If the parents go out and buy *Zork*, and are playing this intense adventure game when the kids come in, the parents have to make just a little effort to include the kids, and they'll play.

inCider: What are they learning?

Snyder: It's giving the kids experience and helping them. All that problem-solving stuff is about all you can say. It's just a neat experience. What good is something like scuba diving? It's a good experience.

inCider: Is there one thought you would like parents and teachers to keep in mind about educational software?

Snyder: That for the next couple of years, at the very best, education by computer is going to be an experimental and expensive notion, and don't believe that there's a definitive set of software or an approach. That is going to be an experiment that may or may not work, in any case. If people know that, they're less likely to get burned. ■

What do people say about Beck diskettes?

"The best buy in diskettes today! The price/performance is unmatched by anything we've found. It's the kind of 'value' that you recommend to your friends."

Craig A. Jefcoat
Jefcoat Pest Control
Bay Springs, MS

"They are the BEST in both PRICE and QUALITY."

Dr. S.J. Tassinari, President
Long Island Laboratories, Inc.
St. James, NY

"The diskettes I ordered from Beck were of high quality and low price. Ordering was simple and delivery was amazingly fast."

Alice H. Blacksin
New England Telephone
Boston, MA

"The quality of BECK's product is certainly equal to that of the major brands and BECK's pricing is superior. Ordering is easy and delivery is extremely fast; you may be certain of receiving many future orders from us."

Walter C. Janney III, President
Compucepts, Inc.
Glenmore, PA

"Rapid service, low cost and high quality have been my experience with Beck."

Sanford Low
Cambridge Studios
Cambridge, MA

"Your disks have proven to be equal or better than the best. Your price, and service within 24 hours, puts you way ahead! More people should know how great you are!"

Walter E. Apelt
Poquoson, VA

"... Beck & 3M are the only error-free diskettes I have encountered, after trying several brands."

James C. Beck (No relation)
Pyramid Accounting Systems
Denver, CO

"The disks work great but best of all was getting a pleasant helpful person when I called to order."

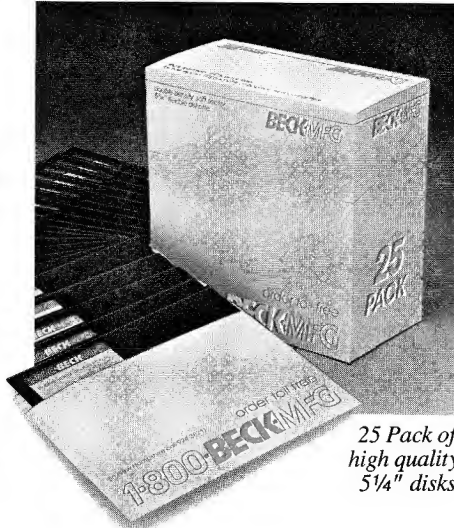
Robert M. Carper
Owensboro, KY

"The service and the ease of ordering is exceeded only by the quality of the product itself. Truly comparable to the big guns in the storage media industry!"

R.A. Proulx
Oregon Marine Construction, Inc.
Readsport, OR

"Your business operation is excellent. Phone order entry is handled quickly & courteously. Shipment is made as promised - quickly. Packaging is good and product is received in perfect shape. Quality is perfect - zero defects. We will certainly re-order from Beck."

Eugene V. Agee
Aladdin Heating Corp.
San Leandro, CA



25 Pack of
high quality
5 1/4" disks

"Best buy in diskettes today"

Craig A. Jefcoat

Beck Double Density Diskettes

Single Sided \$2.19 / 2.79 Double Sided
ea. ea.

It's a slow process to change the mindset, "If it's low cost, it probably isn't good." At Beck we've persisted - our diskette customers have blown-off this skeptical attitude and proven that BECK offers you the best of both worlds - quality and price.

Now it's your turn.

If you like the quality of Dysan, Verbatim, 3M, et al, you'll like the quality of Beck soft sector, 5 1/4" flexible diskettes. The only major difference? Beck costs a lot less.

Our philosophy is:

Excellent quality and reliability at a price that beats the jackets off other diskettes. We can do it because we:
(1) put our money into the product, not mega-marketing schemes; and
(2) sell our money-saving 25-diskette pack to you direct via a toll-free order line, so you get fast, door-to-door service efficiently.

For IBM, Apple, TRS, and 97% of popular microcomputers.

SSDD, soft sector 5 1/4" diskette \$2.19 ea.
DSDD, soft sector 5 1/4" diskette \$2.79 ea.

Beck Quality Diskettes

- Satisfaction, Money-Back Guarantee
- 100% Certified, 100% Error Free
- Full 7-Year Warranty
- Tested and Retested 21 Times to 42 Rigid Specifications
- Meets or Exceeds ANSI Standards

Order Toll Free 1-800-232-5634.
Available in 25 pack only, plus freight.
Complete with hub reinforcing rings, Tyvek envelopes, color coded user labels, and nonmetallic write-protect tabs.

COD's CASH ONLY
Corp. Accts. Welcome



Bulk product inquiries welcome.

(in New Hampshire call 924-3821)

Order Now Toll Free 1-800-BECK-MFG Door to Door in 48 hrs.

NOW YOUR APPLE® CAN HOOK TO ANY MAINFRAME.

Apple is a registered trademark of Apple Computer, Inc.,
CP/M is a registered trademark of Digital Research, Inc.,
Dow Jones News/Retrieval is a registered trademark of
Dow Jones, Inc. The Source is a service mark of
Source Telecomputing Corporation,
CompuServe is a registered
trademark of CompuServe, Inc.



If you have an Apple II, Apple II Plus, or Apple IIe, we have good news for you. Now there are two inexpensive software programs that can turn your Apple into a much more valuable tool.

Softerm 1 connects you with information services.

Softerm 1 lets you retrieve information from services such as *The Source*,sm *CompuServe*,[®] and *Dow Jones News/Retrieval*.[®] Plus, gives you the ability to access bulletin boards and send or receive electronic mail. Other features include user-defined keyboard macros, built-in phone book for automatic dialing, terminal mode line capture simultaneously to print or disk, copy screen to print or disk, and terminal status display.

Softerm 2 connects you with your company's computer.

This expanded version of Softerm lets you gain access to the information stored in your company's main computer from your home or office. With either version of Softerm, you can download information into your Apple and capture it on your own disk

in any format you choose—DOS, CP/M[®], or Pascal. Also included with Softerm is a source program for your host computer to ensure compatibility with Softerm's file transfer capabilities.

Makes your Apple work exactly like any major terminal.

Softerm 2 provides complete emulation of these terminals: ADDS Regent 20, 25, 40, 60; ADDS Viewpoint; Data General D200; Datapoint 3601; DEC VT102, VT52; Hazeltine 1400, 1410, 1500, 1520; Hewlett-Packard 2622A; Honeywell VIP7205; VIP7801, VIP7803; IBM 3101 Model 10 and 20; Lear Siegler ADM-3A, ADM-5 and TeleVideo 910, 925, 950. And the list is growing all the time. We'll send you a User's Guide, handy reference card, and a telephone number to call if you need more assistance.

Softerm can't become obsolete.

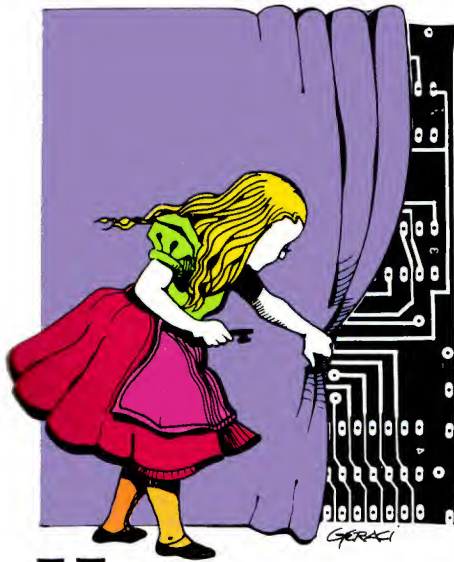
We constantly improve Softerm. And we make those improvements available to you 24 hours a day, 7 days a week. To update your program, just dial our computer and transfer the improvements to your disk.

Get Softerm now.

It's the inexpensive way to turn your Apple into a much more valuable tool for your home or office. Softerm 1 is only \$135; Softerm 2 is \$195. Both are available now from your local dealer or from Softronics, Inc. For more information or to order, call (901) 683-6850.

SOFTRONICS

3639 New Getwell Road, Suite 10
Memphis, TN 38118. (901) 683-6850



inCider's inSidious inSolubles

— by Art Ude —

How gratifying to find that you, *inCider's* readers, are enjoying the inSolubles. Your inSidious puzzles have been arriving at our offices and, starting in July, we will present two each month. If your entry is printed you will receive a free 12-month subscription to *inCider*, or your present subscription will be extended and your name proudly displayed with your inSoluble.

If you haven't submitted an entry, why not? The rules are simple enough and you'll find it's more fun than work. Send your entries to me at *inCider*, 80 Pine St., Peterborough, NH 03458. A magazine like *inCider* has a lead time of several months, so if you would like a response to your submission before it appears on the magazine's pages, please enclose a self-addressed stamped envelope.

Rules for inSidious inSolubles

1. An inSoluble must be a straightforward Applesoft program. Any poked machine language subroutines and calls to that subroutine must be correct.
2. The program must accomplish something. In other words, you should get some kind of a result when it's run.
3. The program shouldn't crash. An error message must mean a typing error.
4. There must be a short explanation of what the program is supposed to do. It may contain clues to the problem.
5. The program may make use of common peripherals such as disk, printer, and modem.
6. There may be more than one error in the program.

In submitting your inSolubles keep in mind the shorter the better—but we like programs that do something

useful. *Remember to provide the solution.*

The first programs I have received show some inGenious inSights into the peculiar ways of Applesoft and, although not problems as such, some letters have provided interesting questions concerning the Apple and its Basic language. A few readers have sent improvements for the programs that have already appeared, or chastised

me for poor programming techniques.

In future columns I will attempt to respond to all your questions and comments, but in the meantime, transfer all those strange happenings your Apple has been experiencing from your computer to ours and cash in on the 12 free issues of *inCider*. By printing two inSolubles each month, your chance of being published has improved by 100%. ■

Text File

The program in Listing 1 demonstrates how to create and read back a sequential text file. Make sure you have a disk in your drive with some space available, and that no current file is called NAMES.TXT. See if you can figure out how to delete the unwanted file—after you figure out what's wrong.

```

10 TEXT : HOME :D$ = CHR$(4)
20 PRINT "I WILL NOW CREATE A SE
   QUENTIAL TEXT FILE"
30 N$ = "NAMES.TXT"
40 PRINT D$;"OPEN ";N$;: PRINT D$
   ;"WRITE ";N$
50 FOR N = 1 TO 10: READ A$: PRINT
   A$: NEXT
60 PRINT D$;"CLOSE"
70 PRINT : PRINT : PRINT "I WILL
   NOW READ A SEQUENTIAL TEXT
   FILE": PRINT
80 PRINT "TYPE <SPACE BAR> TO CO
   NTINUE..."
90 GET A$
100 PRINT D$;"OPEN ";N$;: PRINT
   D$;"READ ";N$
110 PRINT : ONERR GOTO 130
120 INPUT B$: PRINT B$: GOTO 120

130 POKE 216,0: PRINT D$;"CLOSE"

140 END
200 DATA JACK,JILL,MARY,ALICE,T
   OM,DICK,JANE,HARRY,SUE,SAM
    
```

Listing 1. Text File.

Hi-Res Viewer

It is sometimes nice to take a quick look at one or both of the high-resolution pages. Unless you have an excellent memory, you'll probably want to check page 13 of the *Apple II Reference Manual*, or page 28 of the *Ile manual*, to solve the mystery of Listing 2.

Solutions on page 117.

```

10 TEXT : HOME
20 PRINT "          * HI-RES PAGE
   VIEWER *"
30 PRINT : PRINT "*****
   *****"
40 VTAB 10
50 PRINT "          1 - VIEW Hires
   PAGE ONE"
60 PRINT "          2 - VIEW Hires
   PAGE TWO"
70 PRINT "          ESC - VIEW THIS
   PAGE"
80 PRINT "          E - END PROGRAM"

90 KEY = PEEK ( - 16384): POKE -
   16368,0
100 IF KEY = 155 THEN POKE - 1
   6300,0: POKE - 16303,0: GOTO
   90
110 IF KEY = 177 OR KEY = 178 THEN
   140
120 IF KEY = 197 THEN TEXT : HOME
   : END
130 GOTO 90
140 POKE - 16297,0: POKE - 163
   02,0
150 IF KEY = 177 THEN POKE - 1
   6300,0: GOTO 90
160 POKE - 16299,0: GOTO 90
    
```

Listing 2. Hi-Res Viewer.

Circle 156 on Reader Service card.

Flight Simulator II

For Apple II,
Apple II+, & Apple IIe



Put yourself in the pilot's seat of a Piper 181 Cherokee Archer for an awe-inspiring flight over realistic scenery from New York to Los Angeles. High speed color-filled 3D graphics will give you a beautiful panoramic view as you practice takeoffs, landings, and aerobatics. Complete documentation will get you airborne quickly even if you've never flown before. When you think you're ready, you can play the World War I Ace aerial battle game. Flight Simulator II features include ■ animated color 3D graphics ■ day, dusk, and night flying modes ■ over 80 airports in four scenery areas: New York, Chicago, Los Angeles, Seattle, with additional scenery areas available ■ user-variable weather, from clear blue skies to grey cloudy conditions ■ complete flight instrumentation ■ VOR, ILS, ADF, and DME radio equipped ■ navigation facilities and course plotting ■ World War I Ace aerial battle game ■ complete information manual and flight handbook.

See your dealer . . .

or write or call for more information. For direct orders please add \$1.50 for shipping and specify UPS or first class mail delivery. American Express, Diner's Club, MasterCard, and Visa accepted.

Order Line: 800/637-4983

subLOGIC
Corporation
713 Edgebrook Drive
Champaign IL 61820
(217) 359-8482 Telex: 206995

Variance Analysis

Revealed

Who knows if your business is spending too much—or too little? You will, with this handy VisiCalc technique.

by Trish McClelland

One of the more practical applications of VisiCalc is tracking actual operating expenses against the budget. This procedure provides you with a variance, an indication of how much more was spent than was budgeted. Going one step further you arrive at a percent variance that shows exactly what percentage of the monthly budget was spent. Add to that an annual budget figure and a percentage of the annual budget spent and you have a complete year-to-date variance analysis.

Let's start at the beginning. Figure 1 shows the variance analysis model. For each of the five categories there is an actual figure and a budgeted figure, expressed in thousands, with all figures totalled on line 17.

At E11 a variance is required. The calculation should be the actual amount spent minus the budgeted amount, or $+C11-D11$. A negative result means we're under budget, while a positive figure is the amount we're over budget. This command is then replicated for E12 to E15, with both coordinates relative.

Variance Percentage

Now we come to the percentage of the variance. To obtain this figure we divide the difference (or variance) by the original (budget). Therefore, the

command at F11 should read $+E11/D11$.

The answer appears as a six-digit decimal. Since percentages are normally shown as decimals in VisiCalc, we should limit the number of decimal places to two to avoid confusion. This is best done with the command $/F\$$.

Not only does this command reduce the number of decimal places, it also aligns the decimal points, resulting in a spreadsheet that is easier to read. Now the command and calculation located at F11 can be replicated from F12 through F15, again with both coordinates relative.

Budget Percentage

The figures for the 1983 budget are entered manually. Next we have the percentage of the budget spent. Unlike the percent variance, which yields the percentage over or under budget, the percentage of the budget spent is exactly that—the percentage of the annual budget actually spent during a month.

To obtain this figure we divide the actual amount spent by the total budget. The calculation at H11, then, is $+C11/G11$. Again the $/F\$$ is necessary, and the command and calculation is replicated through the remaining categories, from H12 through H15. The coordinates here are also relative.

Along the subtotal line we have the $@SUM$ command at C17, D17 and G17. But in the variance column at E17 we have the calculation $+C17-D17$. And, at F17 the percent variance total should be $+E17/D17$.

Had we summed the percent variances in column F, we would have received the answer .59, which is incorrect. The correct percentage is -.04. Again it is necessary to enter the command $/F\$$ to reduce the number of decimal places.

And at coordinate H17 the calculation should be $+C17/G17$ and the $/F\$$ added. Once more, had we summed this column we would have received a wrong answer.

Let's take a better look at this. Listed in column H is the percentage of the budget spent for each category. Summed up, the response is .4966667, or .50 rounded off. But have we really spent 50 percent of our annual budget in one month?

Looking at the total amount spent, 20.7, we see it cannot be equal to one half of the annual budget, 234. But if we say the total amount spent divided by the total budget, we arrive at the correct figure of .09, which means 20.7 is 9 percent of 234.

Write to Trish McClelland at 205 Yoakum Parkway, Apt. 702, Alexandria, VA 22304.

[illegible]

Unforeseen Expenses

Now, this matrix has worked well up to this point. But what happens when one of the items is an unforeseen expense? Chances are that it has not been budgeted, either for this month or for the year. It is possible to have an annual budget for the item without having a budget for it during a particular month.

Changing the budget figure at D11 to 0, we get an error message at F11. And if the 1983 budget is changed to 0, an error message appears as the annual percentage. The reason for this is simple. You cannot divide a whole number by zero, which is what the present calculation essentially involves.

Simple, but frustrating. Now that the matrix is all set up, how do we convert the percent variance from an error message to a value? We establish a set of @IF tables.

Our matrix, at this point, has encompassed the columns A through I. Now let's go to J11. (See Figure 2.) We begin by entering the same calculation as in coordinate F11, +E11/D11, and by formatting it with the /F\$ command to reduce the number of decimal places to two. This gives the same answer as F11, or ERROR if the budget figure is zero.

Now we move to K11 and type in @ISERROR(J11). This asks if an error message has appeared at coordinate J11. If so, the answer will be TRUE; if not, the answer is FALSE.

Next we enter the value 0 in coordinate L11. At M11 we type @IF(K11,L11,J11). This says, in essence,

that if the response at K11 is TRUE, take the value located at L11; if it is FALSE, take the value located at J11.

Let's ignore the coordinates for the moment and take a closer look at the concept itself. We cannot tell the system to divide the variance by the budget figure if the budget is zero. Therefore, we use a section of the spreadsheet as a work space and enter the command to divide the variance by the budget. We will receive a legitimate value if we have a value other than zero in our budget; but if the budget is zero, we get an error message.

We don't want to submit a report that is filled with error messages. If there's no budget figure, it's much better that the variance percentage be shown as a zero. A percent of the budget is needed—without a budget there

can be no percentage.

In order to achieve this we must first ask if the value received from the variance-divided-by-budget calculation is legitimate. We do this by asking if there is an error message in the cell where the answer should be. The response is TRUE or FALSE.

In order to enter an @IF function in VisiCalc, we must give the system an alternative between two coordinates. The preference is, of course, to use the real answer to the calculation, if that answer is a legitimate value. If it's not, we want to choose the value 0 instead of having the error message appear on the report.

That is why we entered a zero in the @IF table. Then, when we entered the @IF command we could instruct the system to choose the value if other than ERROR, and the zero if the

```

1           J           K           L           M           N
2
3
4
5
6
7
8           IF TABLES
9 -----
10
11          -0.14        FALSE         0         -0.14
              |             |             |             |
              |             |             |             |
              |             |             |             |
              |             |             |             |
              |             |             |             |
              |             |             |             |
              |             |             |             |
              |             |             |             |
              |             |             |             |
              +E10/D10    @ISERROR(J10)      0         @IF(K11,L11,J11)

```


Back Up Your Software

	Our Price
E.D.D. III (Best Nibble Copier!)	68.00
CIA Files (Best Disk Utilities!)	55.00
Trak Star (Digital Track Readout)	95.00
Nibbles Away II	54.00
Copy II Plus	28.00
Locksmith 5.0	75.00
Back-It-Up III	56.00
Wildcard	85.00
Wildcard II	99.00
Wildcard Plus	130.00
Replay II (II+ or I/e)	80.00

Entertainment

	Our Price
ELECTRONIC ARTS	
Hard Hat Mack	27.00
Axis Assassin	27.00
The Last Gladiator	27.00
The Standing Stones	31.00
Pinball Constr. Set	31.00
One-On-One	31.00
Skyfox	31.00
Archon	31.00
OTHER HITS	
Lode Runner	24.00
Choplifter	24.00
Spare Change	24.00
Ultima III: Exodus	40.00
Caverns of Callisto	26.00
Sargon III	37.00
Air-Sim 3	34.00
Flight Simulator II	35.00
Night Mission Pinball	28.00
The Quest	13.50
The Coveted Mirror	13.50
Mini Man	13.50
The Spy Strikes Back	13.50
Expedition Amazon	13.50
Masquerade	26.00
Cubit	28.00
Zaxxon	27.00
Pooyan	23.00
O'Reilly's Mine	23.00
Moon Shuttle	23.00
Wizardry	35.00
Knight of Diamonds	29.00
Legacy of Lylgarwyn	29.00
Crypt of Media	23.00
Zork I, II, or III	27.00
Deadline	34.00
Starcross	27.00
Suspended	34.00
Witness	34.00
Planetfall	34.00
The Enchanter	34.00
Infidels	34.00
Sorcerer	34.00
Time Zone	65.00
The Dark Crystal	37.00
Mr. Cool	29.00
B.C.'s Quest for Tires	26.00
Queston	37.00
Ringside Seat	30.00
Pro Golf Tour	29.00
Broadsides	29.00
Geopolitique 1990	29.00
Eagles	29.00
Cosmic Balance II	29.00
North Atlantic '86	42.00
Bomb Alley	42.00
Fortress	28.00
Germany 1985	26.00
Castle Wolfenstein	20.00
Advanced Blackjack	37.00
Intellectual Decathlon	31.00
Jumpman	30.00
Fax	22.00
Miner 2049'er	30.00
Dino Eggs	30.00
Death in the Caribbean	26.00
Odesta Chess 7.0	52.00
How About a Game of Chess?	22.00
Old Ironsides	29.00
Chivalry	35.00
Maze Craze Constr. Set	30.00
Beagle Bag	20.00
Beneath Apple Manor Spec. Ed.	20.00
Stellar 7	25.00

Hobby

	Our Price
Disk Quick	21.00
Silicon Salad	17.00
Dos Boss	16.00
Beagle Basic	24.00
Beagle G.P.L.E.	36.00
Pronto Dos	20.00
Utility City	20.00
Double Take	24.00
Apple Mechanic	20.00
Flex Text	20.00
Frame Up	20.00
Typefaces	15.00
Alpha Plot	27.00
Tip Disk	15.00
Zoom Graphics	36.00
Bag of Tricks	30.00
Applesoft Compiler (Microsoft)	124.00
Einstein Compiler	96.00
Compiler Plus (Hayden)	70.00
Merlin Assembler	47.00
Merlin Combo Pack	80.00
Orca/M	75.00
Lisa V2.8	65.00
The Graphics Magician	41.00
Paper Graphics	37.00
Short Cuts	29.00

Blank Media

	Our Price
Elephant SS/DD (10)	18.50
Verbatim SS/DD (10)	27.00
Maxell SS/DD (10)	24.00
BSF SS/DD (10)	24.00
Memorex SS/DD (10)	21.00

PROGRAMS Plus

429 Honeyspot Road • Stratford, Connecticut 06497

Corporate and School Purchase Orders Accepted

Mon.-Fri. 9-6; Sat. 10-6

ORDERS ONLY
TOLL FREE 1-800-832-3201

Inquiries & Conn. residents call (203) 378-3662 or 378-8293

30% to 50% off retail

APPLE //e COMPUTER **Call**
FRANKLIN COMPUTER **Call**

Business

	Our Price
ARKTRONICS	
Jane	249.00
APPLE	
Apple Writer //e	150.00
Quick File //e	79.00
ARTSCI	
Magic Window II	95.00
Magicalc	95.00
Magic Memory	72.00
ASHTON TATE	
dBase II	415.00
BUSINESS SOLUTIONS	
The Incredible Jack	115.00
Jack 2	310.00
CONTINENTAL SOFTWARE	
The Tax Advantage	45.00
F.C.M./FL	65.00
G/L, A/R, A/P, Payroll ea	159.00
DECISION SUPPORT	
The Business Accountant	175.00
DOW JONES SOFTWARE	
The Market Analyzer	275.00
Market Manager	230.00
HAYDEN	
Pie Writer V2.2	105.00
HOWARDSON'S	
Creative Financing	159.00
Real Estate Analyzer II	139.00

Educational Software

	Our Price
APPLE	
Apple Logo	160.00
BARON'S	
Computer SAT	67.00
CBS	
Mastering the SAT	105.00
College Boards	125.00
Success w/Math (ea.)	20.00
Goren's Bridge	56.00
COUNTERPOINT	
Early Games	22.00
Music	22.00
Matchmaker	22.00
Piece of Cake	22.00
Fraction Factory	22.00
Quizagon	22.00
DAVIDSON & ASSOCIATES	
Speed Reader II	52.00
Word Attack!	37.00
Math Blaster	37.00
DESIGNWARE	
Spellcopter	27.00
Crypto-Cube	27.00
Math Maze	27.00

Accessories

	Our Price
Kensington System Saver	65.00
Cool + Time	72.00
Hayes Microcom //e	245.00
Hayes 1200 Baud Smartmodem	539.00
Novation Apple Cat II	249.00
Novation 212 Apple Cat II	445.00
Microsoft Z-80 Software	238.00
Microsoft 16K Ramcard	75.00
Videoterm	238.00
Videx Ultraterm	285.00
Videx Keyboard Enhancer	109.00

KENSINGTON MICROWARE

Format II Enhanced	105.00
LJK	
Letter Perfect	112.00
Data Perfect	99.00
LIVING VIDEOTEXT	
Think Tank	115.00
LINK SYSTEMS	
Datafax	129.00
Datalink	65.00
MEGAHAUS	
MegaWriter	75.00
MegaSpell	45.00
MICROLAB	
Data Factory 5.0	215.00
Payroll Manager	215.00
MICROPRO	
Wordstar	250.00
Infostar	250.00
Reportstar	220.00
Wordstar w/Z-Card	350.00
MICROSOFT	
Multiple	175.00
A.L.D.S.	79.00
QUARK	
Word Juggler //e	155.00
Catalyst //e	120.00

SENSIBLE SOFTWARE

The Sensible Speller	82.00
Bookends	79.00
SIERRA ON-LINE	
The General Manager II	150.00
The Screenwriter //e	82.00
SILICON VALLEY	
The Word Handler II	42.00
The List Handler	36.00
The Handlers	90.00
SOFTWARE PUBLISHING	
PFS: File	82.00
PFS: Graph	82.00
PFS: Report	82.00
PFS: Write	82.00
PFS: School Record Keeper	105.00
SOFTLINK	
Practical Accountant //e	110.00
STONEWARE	
DB Master Version Four	230.00
DB Master Utility 1 or 2	85.00
DB Master Stat. Pack	85.00
VISICORP	
Advanced Visicalc //e	260.00
VisiSchedule	195.00
VisiCalc //e	160.00
VisiDex	160.00

MICROLAB

English SAT	22.00
Math SAT	22.00
Constitution Tutor	22.00
READER'S DIGEST	
Micro Habits	29.00
Trickster Coyote	29.00
Chambers of Vocab	29.00
Alphabet Beast & Co.	26.00
SPINNAKER	
Kidwriter	24.00
Fraction Fever	24.00
Grandma's House	24.00
Aerobics	31.00
Snooper Troops 1 or 2	31.00
In Search of	27.00
Kindercomp	20.00
Alphabet Zoo	20.00
Hey Diddle Diddle	20.00
Facemaker	24.00
Story Machine	24.00
Rhymes & Riddles	20.00
Delta Drawing	41.00
TERRAPIN	
Terrapin Logo	105.00
XEROX	
Stickybear ABC	29.00
Stickybear Numbers	29.00
Stickybear Shapes	29.00
Stickybear Opposites	29.00
Fat City	29.00

Saturn 128K Ramcard

Accelerator II	475.00
Pro-Modem 1200	375.00
Novis Hard Disks	85.00
Mockingboard	85.00
Mockingboard Speech Option	85.00
Echo II Speech Synthesizer	124.00
S.A.M. Automatic Mouth	79.00
TG Paddles	28.00
G.J. Joystick	42.00
TG Select-A-Port	42.00
Kraft Joystick	40.00

Super-MX Cards (Spies Lab)

Grappler Plus	120.00
Buffered Grappler Plus	180.00
PKasko/U Interface Card	135.00
Chalkboard Power Pad	80.00
Chalkboard Starter Kit	35.00
Koala Pad	89.00
EPS Keyboard	279.00
E-Z Port II	28.00
Elephant Trunk	20.00
Perfect Data Cleaning Kit	12.00

Printers

	Our Price
APPLE	
Imagewriter	520.00
Daisy Wheel Printer	1825.00
BROTHER	
HR-25	825.00
DIABLO	
620 RS-232C	960.00
630 (PC)	1890.00
Ink Jet Printer	1150.00
EPSON	
FX-80	550.00
FX-100	720.00
FX-80 F/T	400.00
IDS	
Prism 80 (basic)	1065.00
Prism 80 (full)	1435.00
Prism 132 (basic)	1225.00
Prism 132 (full)	1655.00
P-480 Microprism	425.00
JUKI	
6100	450.00
MANNESMANN TALLY	
MT-160L	629.00
MT-180L	845.00
MT-Spirit	325.00
OKIDATA	
Microline 82A	335.00
Microline 83A	595.00
Microline 92	475.00
Microline 93	775.00
Microline 84	1105.00
PROWRITER (C. Itoh)	
Prowriter 8510AP	375.00
Prowriter 1550AP	600.00
StarWriter A10-20P	575.00
StarWriter F10-40PU	1150.00
STAR MICRONICS	
Gemini 10X	299.00
Gemini 15X	410.00
Delta 10	499.00
Delta 15	589.00
Powertype	359.00
TOSHIBA	
P-1350	1725.00
TRANSTAR	
120	440.00
130	610.00
315	495.00
PICS Card	95.00

Disk Drives

	Our Price
APPLE	
Disk II Drive	345.00
Duo Disk w/Acc. Kit.	695.00
ProFile Disk Drive	1525.00
INDUS	
GT-Slim Line	260.00
MICRO SCI	
A2 143K	250.00
A40 164K	295.00
A70 286K	360.00
Micro SCI Controller	78.00
RANA	
Elite I	260.00
Elite II	460.00
Elite III	580.00
Rana Disk Controller	95.00
QUENTIN	
AP100A Full Height	225.00
AP105A Slim Line	210.00
AP110A Twin Pak	435.00

Monitors

	Our Price
AMDEK	
Color I Plus	310.00
Color II Plus	440.00
Color III Plus	379.00
Video 300G Green	149.00
Video 300A Amber	160.00
DVM RGB Interface (II or III)	139.00
DVM 80e RGB Interface	149.00
TAXAN	
Green (Hi-Res)	130.00
Amber (Hi-Res)	140.00
210 13" Color (Lo-Res)	299.00
RGB Vision-3 (Hi-Res)	465.00
410-80 RGB-2 Interface	140.00
BMC	
Color Plus Monitor	275.00
BM 12 AUW Green	95.00
SAKATA	
SC-100 Color	265.00
SC-200 RGB Color	475.00
SG-1000 Green	95.00
STS-1 Stand	39.00
USI	
12" Amber	159.00
12" Green	149.00

Home

	Our Price
Home Accountant	48.00
Dollars and Sense	75.00
The Accountant	87.00
Time is Money	65.00
Money Street	75.00
Financial Cookbook	39.00
Cut and Paste	39.00
Homeward	37.00
Bank Street Writer	48.00
Bank Street Speller	48.00
ASCII Express: Professional	85.00
Data Capture //e	67.00
Sotterm I	95.00
Typing Tutor II	18.00
Master Type	28.00
Micro Cookbook II or //e	27.50
Music Construction Set	31.00

For items not listed just call. If we don't have it, we can get it.

Visit Our Showroom: Exit 31 off I-95

"And in the process we've explored the mystical qualities of @IF tables."

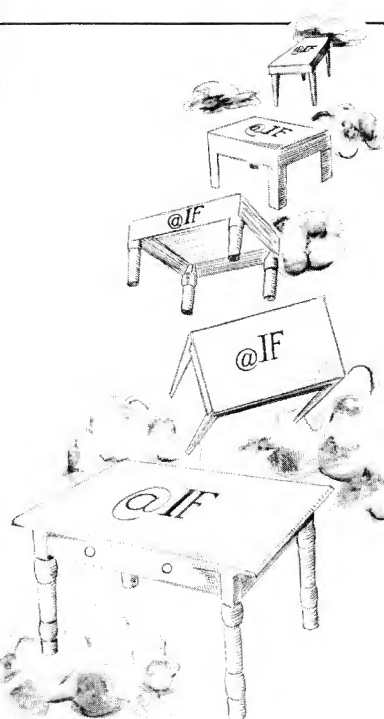
response was an error.

Going back to the matrix, now that the worksheet for this line is complete (as far as the monthly variance goes), we can replicate it to all the other lines. All the coordinates involved would be relative.

We still have one step left to complete this function. In Figure 1, we still have the command +E11/D11 at coordinate F11. To complete this process this command should be replaced with +M11, which simply ensures that whatever the outcome of our @IF table, it will be reflected in the place where it counts—under % Variance.

Percentage of Budget Spent

Now that we have completed the table for the monthly variance percentage, we do the same thing for the



percentage of budget spent. We can begin this table at N11, where the calculation will be +C11/G11. At O11, we'll have @ISERROR(N11); at P11, 0; and at Q11, @IF(O11,P11,N11). At J11 and Q11 the /F\$ command is typed in, and last, at H11, +Q11 is entered.

Of course we won't print out the entire worksheet—just that portion that others should see (and that they'll understand). The matrix as shown in Figure 1 will be the report as presented.

Now we have a completed matrix. We can enter the various operating expenses, the actual amount spent and the monthly and annual budgets, and arrive at an error-free variance, variance percentage and percentage of the total budget spent. And in the process we've explored the mystical qualities of @IF tables. Hopefully you've learned that it's not too difficult after all. ■

Circle 344 on Reader Service card.

THE BUILDING BLOCKS OF A GREAT SYSTEM

We carry a full line of computer supplies at wholesale prices. Check our costs and you'll discover that there's no need to look elsewhere.

— This Month's Moneysaver —

BETTER DISKETTES

SYNCOM

Diskettes are 100% error-free, with a Write Enable Notch and a reinforced hub. Each come with a protective Tyvek® envelope, extremely durable and guards against static charge. Lifetime Guarantee & meets all industry standards (ISO, ECMA, ANSI, JIS) 10 in a package, polybagged and shrink-wrapped and come with labels. DS, DD are IBM compatible.

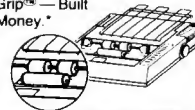
No.	Item	Price per bag			WT. 1 lb.
		1-10	11-24	25 on up	
#626	5 1/4" SS,DD	17.00	16.00	15.00	
#627	5 1/4" DS,DD	22.00	21.00	20.00	

NOTE: SS, DD can be used as SS,SD.
Tyvek® is a registered trademark of DuPont Co.

AMAZING MICRO-GRIP

Finally! A way to add inexpensive friction feed to your Epson-type printer. We have Micro-Grip®! Now, instead of buying a new printer to accept both tractor and friction feed (very expensive!), we've manufactured a device to upgrade your old system for a fraction of the cost. Installed with a screwdriver, Micro-Grip® does not disturb the tractor capabilities of your printer. For Epson MX-70/80, RX80 and printers based on the Epson design, such as the IBM PC, Commodore and H.P. Micro-Grip® — Built by Us to Save You Time and Money.*

\$39.95



NO.	QUANTITY	PRICE*
#670	1-5	39.95/EA
	6-11	35.95/EA
	12 ON UP	29.96/EA
WT.		*PLUS SHIPPING
1 LB./EA.		

*NOTE: Micro-Grip® is not a substitute for a letter quality printer. It is a retrofit mechanism for the purpose of obtaining single sheet correspondence from your tractor feed printer.

For Credit Card Orders ONLY!
Call Toll Free 1-800-225-8249



TERMS & CONDITIONS

A minimum order of 10.00 is required, not including shipping. Prices effective 2/1/84 and are subject to change without notice. Automatic credit is extended to federal agencies, but to keep our prices competitive, we must request payment with orders from all other individuals and institutions. No C.O.D.'s. Freight charges added to credit card orders. All others shipped freight-collect. CASH ONLY. No merchandise may be returned without prior written authorization from this office. Merchandise ordered in error or not wanted is subject to a 25% restocking charge. Defective material replaced at no charge. All returns limited to a merchandise credit only. Mass. residents add 5% sales tax.



Bill Cole Enterprises, Inc.

P.O. BOX 60 • DEPT. IN5 • WOLLASTON, MA 02170-0060 • 617-963-5510

HIGH TECHNOLOGY AT AFFORDABLE PRICES

Dot Matrix Printers

Anadex Series	\$ CALL
C. Itoh Prowriter (8510)	379.88
C. Itoh Prowriter 2 (132 col)	609.88
C. Itoh Hot Dot (180 cps)	519.88
Epson RX/FX Series	CALL
IDS/DataProducts P-480	439.88
IDS/DataProducts P-132	1489.88
IDS/DataProducts P-132 w/4-color	1699.88
Inforunner Riteman	339.88
Memotech DMX-80	339.88
Mannesmann Tally 160-L	629.88
Mannesmann Tally 180-L	879.88
Mannesmann Tally Spirit-80	329.88
Okidata Microline 82A	CALL
Okidata Microline 83A	CALL
Okidata Microline 84 Step II	CALL
Okidata Microline 92	CALL
Okidata Microline 93	CALL
Panasonic 1090	339.88
Quadram QuadJet	799.88
Star Micronics Gemini 10X	299.88
Star Micronics Gemini 15X	429.88
Star Micronics Delta 10	499.88
Star Micronics Delta 15	589.88
Star Micronics Radix 10	CALL
Star Micronics Radix 15	CALL
Toshiba P-1351	1739.88
P-1351 Tractor	169.88
Sweet-P Plotter	519.88
Sweet-P Apple Pkg.	89.88

Letter-Quality Printers

C. Itoh A-10 Starwriter	\$ 599.88
C. Itoh F-10 Starwriter	1119.88
C. Itoh F-10 Printmaster	1469.88
C. Itoh Tractor Feed	219.88
F-10 Sheet Feeder	599.88
Diablo 620 (RS-232)	939.88
Diablo 630 (Parallel)	2019.88
NEC 2010/2030	899.88
NEC 3530	1699.88
NEC 2000/3500 Tractor	239.88
NEC 2000/3500 Sheet Feed	479.88
Qume Sprint 11/40	1559.88
Qume Sprint 11/55	1769.88
Sprint 11 Tractor Feed	219.88
Sprint 11 Sheet Feed	599.88
Qume LetterPro (20cps)	709.88
Silver Reed EXP-770 (25 cps)	999.88
EXP-770 Tractor	CALL

Silver Reed EXP-550 (17 cps)	609.88
EXP-550 Tractor	129.88
Silver Reed EXP-500 (12 cps)	449.88
EXP-500 Tractor	119.88
Smith Corona Memory	
Correct III Messenger	589.88
Star Micronics PowerType	359.88

Accessories

Pkasso-U Printer Card & cable	\$ 139.88
Grappler+ Printer Card & cable	139.88
16K Buffered Grappler+ Printer Card & cable	189.88
Generic Printer Card & cable	79.88
EMS Diskettes (SSSD) 10/bx	22.88
EMS Diskettes (SSDD) 10/bx	26.88
EMS Diskettes (DSD) 10/bx	33.88
EMS Diskette Box, 60 disk capacity	24.88
EPD Lemon	49.88
EPD Lime	74.88
EPD Peach	79.88
EPD Orange	109.88
Kensington MicroSaver	59.88
Microfazer 8K P/P	129.88
Microfazer 64K P/P	169.88
Microfazer 128K P/P	239.88
Microfazer 256K P/P	549.88
Microfazer 512K P/P	769.88
Printer Cables (Centronics male-male, male-female)	29.88
80 Column Printer Stand	39.88
132 Column Printer Stand	49.88
80 Column Printer Paper (2500/ct)	39.88
Trace Sound Trap (80 col)	129.88
2-Way Printer Switch Box	109.88
4-Way Printer Switch Box	CALL
Printwheels & Ribbons	CALL

Monitors

Amdek 300G (12" green)	\$ 149.88
Amdek 300A (12" amber)	159.88
Amdek Color-1 (12" composite color monitor)	319.88
Amdek Color-2 (12" RGB)	469.88
Amdek DVM (Apple II/II+)	139.88
NEC JB-1205M (12" amber)	169.88
NEC JB-1201M (12" green)	169.88
Roland DG-121G (12" green)	159.88
Roland DG-121A (12" amber)	159.88
USI Pi-3 (12" amber)	179.88

Modems

Hayes Micromodem IIe (300bd) w/Smartcom I communications software	\$ 259.88
Hayes Smartmodem (300bd)	239.88
Hayes Smartmodem (1200bd)	559.88
Novation SmartCat 103 (300bd)	189.88
Novation SmartCat 212 (1200bd)	439.88
Novation Apple Cat (300 bd)	269.88
Novation Apple Cat Upgrade board (for Apple Cat 300 bd to 1200 bd)	329.88
Novation Apple Cat (1200 bd)	589.88
USR Password (300bd)	159.88
USR Password (1200bd)	369.88
ALS RS-232C Interface	119.88
MPC RS-232 interface card	89.88
9-wire RS-232 Cable (1-8 & 20)	29.88
25-wire RS-232 Cable	39.88

Peripherals

ALS Smarterm II (80 col card)	\$ 149.88
ALS CP/M Plus Card (CP/M 3.0 w/GSX graphics, software)	329.88
ALS Z-Card (Z-80 card w/CP/M 2.2 & assorted utilities)	149.88
ALS RS-232C Interface	119.88
AMT MicroDrive (half height)	219.88
Franklin Ace 1000	CALL
Franklin Ace 1200 OMS	CALL
Kensington System Saver	79.88
Microsoft Z80 Softcard	CALL
Microsoft 16K RAMcard	89.88
Quadram eRAM (IIe 80 cols)	119.88
Rana Elite-1 Disk Drive	259.88
Rana Elite-2 (DS)	459.88
Rana Elite-3 (Quad Density)	549.88
Rana Drive Controller Card	99.88
TBL Cooling Fan	59.88
TBL Disk Drive Controller	69.88
TBL Printer Card & cable	59.88
Titan Accelerator II	499.88
Titan 32K Neptune Board	199.88
Titan 64K Neptune Board	319.88
Titan 128K Neptune Board	409.88
Titan 32K Memory Board	169.88
Titan 64K Memory Board	279.88
Titan 128K Memory Board	399.88
Videx VideoTerm w/switch	239.88
Videx VideoTerm w/o switch	209.88
Videx UltraTerm (80/160 column)	289.88
Videx Enhancer II	109.88
Videx PSIO interface board	179.88

We know computer mail-order... we wrote the book

The book is ready: our **Spring 1984 Catalog**, a comprehensive buyer's guide that makes shopping by mail easier than ever before. Now you can get straight answers and complete specifications from one source. And we explain the technical terms so that even beginners can understand what they're buying. No matter how you order—by phone or mail—you'll get the answers you need to select the right product every time.

Choose from over 300 products: dot-matrix & letter-quality printers, printer interfaces, cables, stands, printwheels, ribbons & supplies, plus modems, monitors & peripheral boards for the Apple II/II+ computers. We also carry the Franklin Ace and Memotech computer systems as well.

Find out what it's like to shop with the company that wrote the book on computer mail order: send \$2 for our **Spring 1984 Catalog** today.



(603) 881-9855

TECHNICAL SALES DESK

Toll-Free Order Desk: (800) 343-0726

Hours: 9:00 to 5:30 EST, Mon-Fri

- FREE shipping on all orders (UPS ground)
- Shipments fully insured at no extra charge
- MasterCard, VISA, American Express, Diners Club & Carte Blanche credit cards accepted
- No surcharges on credit card
- Cards are not charged until your order is shipped from our warehouse
- CODs accepted up to \$1000 (add \$10 for COD handling). Payable with certified check, money order or cash.
- Full warranties on all products
- 1-year extended warranties are available for many products (just ask us)
- Sorry, no APO/FPO or foreign orders

THE BOTTOM LINE

MILFORD, NH 03055-0423 □ TELEPHONE (603) 881-9855





The Exodus: Ultima III Character Editor

Exodus: Ultima III, a stunning fantasy adventure and the third scenario in the popular Ultima series, is rated by most fantasy adventure players as the best of the series. This offering from Origin Systems Inc. has been at the top of the charts for months.

In spite of its popularity, however, the game is tough to master. New characters are hard put to survive their first battles, and experienced characters, after months of development, can be abruptly slain and reduced to ashes. Most players would like a little help, once in a while—a faithful character restored to life, a character's class changed to a more versatile one, or just a little extra gold. The Ultima III Character Editor offers just such an opportunity. It enables you to examine the data on each member of your party, get a full printout if you like, then change any of the values as much as you want.

This editor was written in Applesoft on an Apple II Plus with 48K memory. It should work on any of the Apple II family, as long as you have at least 48K and are running DOS 3.3. The RWTS routine of DOS 3.3 is needed to read from and write to the disk.



The program lines are short for ease in typing and in following the logic. You can double-up many of them, if you want, to save on memory space. Space is not really critical in this program, however, as there are no graphics, and Applesoft is able to handle the strings with no trouble.

How It Works

Ultima III uses 64 bytes to store each character's data—name, food, arms and weapons, marks and cards, wisdom, and so forth. Characters are stored, four per sector,

in one place on the "player" disk. When a character is chosen to be one of the four in the adventuring party, the data on that character is copied to another sector. As the game is played, this "party" sector is frequently updated. Only when the party is dispersed is the new data read back to the original storage area.

To modify any character you must first form a party and make sure that character is included. The Character Editor then uses the RWTS routine of DOS 3.3 to read the party sector into the Apple's RAM memory. With that sector in place you can change the four characters any way you want. When

Typing in the Program

The Ultima III Character Editor is a long program, so type carefully. When you are finished, check it several times for errors. There are many REM statements to identify the modules; you can leave them out if you want to save on typing.

The crucial line is 6065—the one that puts the characters back on the disk. If there are bugs in the rest of the program, then the characters line 6065 stores may be monsters instead of heroes. *Until you're sure the program works correctly, leave line 6065 out.*

Disaster threatens and there's nothing you can do. Or is there? Check out this utility for reviving and regirding characters in this popular adventure game.

—by Kerry Lantz—

you're done, read the sector back onto the disk and the changes become permanent.

The first screen the program generates is a title page prompting you to insert the player disk into the disk drive. This is not the disk that arrives in the Ultima III package. The instructions Origin supplies tell you how to make a duplicate to use for playing the game. That is the disk used by my Character Editor.

After you insert the disk, your Apple reads the party sector and stores those 256 bytes starting at location 38000, as defined in line 7025. The next screen is a roster of your four characters. Now you have three choices: to examine and modify a character; to send the characters back to the disk, making any changes permanent; and to exit the program. Changed characters are not sent to the disk until you specifically command it, in case you might have second thoughts.

Change Possibilities

When you choose a character for a closer look, a screen appears that displays the name of the character and four options. One option is a printout of the character's data. Even if you never modify anything, this capability makes the program worth typing in.

Another choice lets you give a character "marks" and "cards." I can't say much about these without giving away

some of the solution to Exodus. In general, marks give you special abilities and protection; good things happen to characters with marks. Cards are needed in the final stages of play when you actually confront "Exodus." Much of the game is spent in locating marks and cards, and discovering how to use

them correctly. Now you can give your characters any that you want.

A very powerful option lets you view the equipment your character is holding—both type and number of each, as well as which item is currently set for use. You can give your character any kind of item, right up to the "ex-

Lines 100–525 are the subroutines frequently called by the rest of the program. When Applesoft looks for a subroutine, it starts at the beginning of the program and searches the lines sequentially, so if the subroutines are at the beginning the search is fast. During initialization I defined two functions that are used in these routines to translate between decimal and hexadecimal.

Lines 200–265 control cursor movement and sort keyboard input.

Lines 1000–1100 read the character's data from memory. Ultima III stores values in hex, but Applesoft uses decimal numbers. So, proper subroutines are called to read the byte, translate it into hex, and store it as a variable.

Lines 2000–4085 create the three data displays on your character. The character's name, printed across the top of the screen, is used as a top line for them all. Then the routines print basic character values, armor and weapons, or marks and cards.

Lines 5000–5075 make up the main menu for changing a character, then call the proper routine.

Lines 5200–5855 are the routines that actually alter the character. They list the data, control the cursor, change the value as you specify, and poke the new information into the memory.

Lines 5900–5940 control the printout function of the program, so you can get a hard-copy record. If your printer needs any special codes, this is the place to put them.

Lines 6000–6090 control the roster page and the basic options: examine individual characters, leave the program, and store the modified characters back to the disk. Line 6065, as mentioned, is the one that tells RWTS to do the storing. Keep this line out of the program until you are sure everything works fine.

Lines 7000–7075 initialize the program. HIMEM is lowered just a little to make room for the 256 bytes of your four characters. The pokes set up the RWTS routine of DOS 3.3.

Lines 7100–7190 print the title page and ask you to insert the Ultima III player disk.

Lines 7205–7245 read the sector containing your party of four characters from the disk into RAM, then into the N\$ array.

Table 1. Line-by-line program analysis.

otics," and from one to 99 of each. (Keep in mind, though, you really don't need many of any item.)

The final choice is the one you'll use most often—the one to change basic values of your character. If the character is in poor health (D for dead or A for ashes), you can restore it to sound-

ness. You can alter race, class and sex. You can set the four basic qualities (strength, dexterity, IQ and wisdom) anywhere from 0 to 99. You can bestow keys, gems, torches and powders, and restore gold, food and hit points. Hit points and experience points can be increased to a maximum of 9999,

although you'd better be careful. If experience is set that high, you may find it has plummeted to 0000 when the character earns another point.

For each screen the cursor controls are the same: You move it through the list with the two arrow keys. Hitting return brings you back to the main menu. Pressing the space bar lets you change the value next to the cursor. If the value is a letter, you see the choices offered by the game; if the value is a number, you see the range accepted by the game. For cards and marks, the space bar is a simple on/off switch for changing the card or mark next to the cursor. ■

A\$	Array of values for armor.
B	Temporary decimal value of a byte.
B\$	Temporary hex value of a byte.
BASE	Starting location of the four characters.
BB\$	Temporary hex value of a second byte.
C\$	Class of character.
CC\$	String of initials for class.
D\$	Dexterity.
DEC	Function for changing from hex to decimal.
E\$	Experience.
E1	Armor equipped.
E2	Weapon equipped.
F\$	Food.
G\$	Gold.
GM\$	Gems.
H	Horizontal cursor position.
H\$	Health.
HEX	Function for changing from decimal to hex.
HH\$	String of initials for health.
HN\$	Hit points now.
HT\$	Hit point total.
K	Miscellaneous variable.
K\$	Keyboard input.
KB	Keyboard strobe.
KY\$	Keys.
L	Miscellaneous.
LOC	Location of one character.
M\$	Magic points.
MC	Array of marks and cards values.
N\$(N)	Array of four names.
P\$	Powders.
Q\$	I. Q.
R\$	Race.
RR\$	String of initials for race.
S\$	Sex.
SG\$	Strength.
SS\$	String of initials for sex.
T\$	Torches.
V	Vertical cursor position.
V1	Length of first column.
V2	Length of second column.
V3	Lines from top of screen.
W\$	Array of values for weapons.
WM\$	Wisdom.
X	Miscellaneous variable.

Table 2. Variable list for Ultima III Character Editor.

ULTIMA III: EXODUS CHARACTERS

1. PRIEST
2. STRIDER
3. CONAN
4. >NO CHARACTER<

YOUR CHOICES:

1-4 CHOOSE A CHARACTER TO MODIFY
 <RETURN> MAKE CHANGES PERMANENT
 <ESCAPE> EXIT PROGRAM

Figure 1. The roster screen shows the four characters in your party. From here you can change them, make the changes permanent, or leave the program.

EXODUS CHARACTER: PRIEST

YOUR CHOICES ARE:

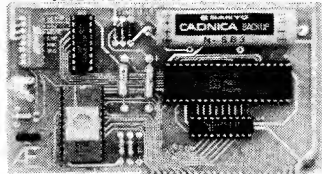
1. CHARACTER VALUES
 2. ARMOR & WEAPONS
 3. MARKS & CARDS
 4. PRINT OUT CHARACTER
- <RET> RETURN TO ROSTER

Figure 2. The character menu lets you change your character's basic values, add weapons and armor, give marks and cards, or get a printout of the character's data. Commands are given by pressing only one key.

Apple Peripherals Are All We Make

That's Why We're So Good At It!

THE NEW TIMEMASTER II



Automatically date stamps files with PRO-DOS

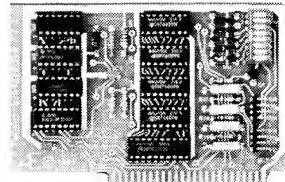
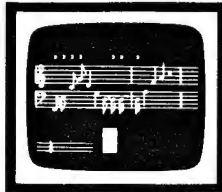
NEW 1984 DESIGN
An official PRO-DOS Clock

- Just plug it in and your programs can read the year, month, date, day, and time to 1 millisecond! The only clock with both year and ms.
- NiCad battery keeps the TIMEMASTER II running for over ten years.
- Full emulation of ALL other clocks. Yes, we emulate Brand A, Brand T, Brand P, Brand C, Brand S and Brand M too. It's easy for the TIMEMASTER to emulate other clocks, we just drop off features. That's why we can emulate others, but others CAN'T emulate us.
- The TIMEMASTER II will automatically emulate the correct clock card for the software you're using. You can also give the TIMEMASTER II a simple command to tell it which clock to emulate (but you'll like the Timemaster mode better). This is great for writing programs for those poor unfortunates that bought some other clock card.
- Basic, Machine Code, CP/M and Pascal software on 2 disks!
- Eight software controlled interrupts so you can execute two programs at the same time (many examples are included).
- On-board timer lets you time any interval up to 48 days long down to the nearest millisecond.

The TIMEMASTER II includes 2 disks with some really fantastic time oriented programs (over 40) including appointment book so you'll never forget to do anything again. Enter your appointments up to a year in advance then forget them. Plus DOS dater so it will automatically add the date when disk files are created or modified. The disk is over a \$200.00 value alone—we give the software others sell. All software packages for business, data base management and communications are made to read the TIMEMASTER II. If you want the most powerful and the easiest to use clock for your Apple, you want a TIMEMASTER II.

PRICE \$129.00

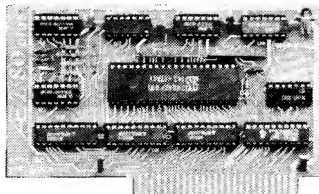
Super Music Synthesizer Improved Hardware and Software



- Complete 16 voice music synthesizer on one card. Just plug it into your Apple, connect the audio cable (supplied) to your stereo, boot the disk supplied and you are ready to input and play songs.
- It's easy to program music with our compose software. You will start right away at inputting your favorite songs. The Hi-Res screen shows what you have entered in standard sheet music format.
- Now with new improved software for the easiest and the fastest music input system available anywhere.
- We give you lots of software. In addition to Compose and Play programs, 2 disks are filled with over 30 songs ready to play.
- Easy to program in Basic to generate complex sound effects. Now your games can have explosions, phaser zaps, train whistles, death cries. You name it, this card can do it.
- Four white noise generators which are great for sound effects.
- Plays music in true stereo as well as true discrete quadraphonic.
- Full control of attack, volume, decay, sustain and release.
- Will play songs written for ALF synthesizer (ALF software will not take advantage of all our card's features. Their software sounds the same in our synthesizer.)
- Our card will play notes from 30HZ to beyond human hearing.
- Automatic shutoff on power-up or if reset is pushed.
- Many many more features.

PRICE \$159.00

Z-80 PLUS!



- TOTALLY compatible with ALL CP/M software.
- The only Z-80 card with a special 2K "CP/M detector" chip.
- Fully compatible with microsoft disks (no pre-boot required).
- Specifically designed for high speed operation in the Apple IIe (runs just as fast in the II+ and Franklin).
- Runs WORD STAR, dBASE II, COBOL-80, FORTRAN-80, PEACHTREE and ALL other CP/M software with no pre-boot.
- A semi-custom I.C. and a low parts count allows the Z-80 Plus to fly thru CP/M programs at a very low power level. (We use the Z-80A at fast 4MHZ.)
- Does EVERYTHING the other Z-80 boards do, plus Z-80 interrupts.

Don't confuse the Z-80 Plus with crude copies of the microsoft card. The Z-80 Plus employs a much more sophisticated and reliable design. With the Z-80 Plus you can access the largest body of software in existence. Two computers in one and the advantages of both, all at an unbelievably low price.

PRICE \$139.00

Viewmaster 80

There used to be about a dozen 80 column cards for the Apple, now there's only ONE.

- TOTALLY Videx Compatible.
- 80 characters by 24 lines, with a sharp 7x9 dot matrix.
- On-board 40/80 soft video switch with manual 40 column override
- Fully compatible with ALL Apple languages and software—there are NO exceptions.
- Low power consumption through the use of CMOS devices.
- All connections are made with standard video connectors.
- Both upper and lower case characters are standard.
- All new design (using a new Microprocessor based C.R.T. controller) for a beautiful razor sharp display.
- The VIEWMASTER incorporates all the features of all other 80 column cards, plus many new improvements.

	PRICE	BUILT IN SOFTWARE	SHIFT KEY SUPPORT	LOW POWER DESIGN	40 COLUMN HOLD	7x9 DOT MATRIX	LIGHT PEN INPUTS	40 COLUMN OVERRIDE	INVERSE CHARACTERS
VIEWMASTER	179	YES	YES	YES	YES	YES	YES	YES	YES
SUPRTERM	MORE	NO	YES	NO	NO	NO	NO	YES	YES
WIZARD80	MORE	NO	NO	NO	NO	YES	NO	YES	YES
VISION80	MORE	YES	YES	NO	NO	YES	NO	NO	NO
OMNIVISION	MORE	NO	YES	NO	NO	NO	NO	YES	YES
VIEWMAX80	MORE	YES	YES	NO	NO	YES	NO	NO	YES
SMARTERM	MORE	YES	YES	NO	NO	NO	YES	YES	NO
VIDEOTERM	MORE	NO	NO	YES	NO	YES	YES	NO	YES

The VIEWMASTER 80 works with all 80 column applications including CP/M, Pascal, WordStar, Format II, Easywriter, Apple Writer II, VisiCalc, and all others. The VIEWMASTER 80 is THE MOST compatible 80 column card you can buy at ANY price!

PRICE \$179.00

- Expands your Apple IIe to 192K memory.
- Provides an 80 column text display.
- Compatible with all Apple IIe 80 column and extended 80 column card software (same physical size as Apple's 64K card).
- Can be used as a solid state disk drive to make your programs run up to 20 times FASTER (the 64K configuration will act as half a drive).
- Permits your IIe to use the new double high resolution graphics.
- Automatically expands VisiCalc to 95 K storage in 80 columns! The 64K config. is all that's needed, 128K can take you even higher.
- PRO-DOS will use the MemoryMaster IIe as a high speed disk drive.

MemoryMaster IIe 128K RAM Card

- Precision software disk emulation for Basic, Pascal and CP/M is available at a very low cost. NOT copy protected.
- Documentation included, we show you how to use all 192K.

If you already have Apple's 64K card, just order the MEMORYMASTER IIe with 64K and use the 64K from your old board to give you a full 128K. (The board is fully socketed so you simply plug in more chips.)

MemoryMaster IIe with 128K	\$249
Upgradeable MemoryMaster IIe with 64K	\$169
Non-Upgradeable MemoryMaster IIe with 64K	\$149

Our boards are far superior to most of the consumer electronics made today. All I.C.'s are in high quality sockets with mil-spec. components used throughout. P.C. boards are glass-epoxy with gold contacts. Made in America to be the best in the world. All products work in the APPLE IIe, II+, II+ and Franklin. The MemoryMaster IIe is IIe only. Applied Engineering also manufactures a full line of data acquisition and control products for the Apple; A/D converters and digital I/O cards, etc. Please call for more information. All our products are fully tested with complete documentation and available for immediate delivery. All products are guaranteed with a no hassle **THREE YEAR WARRANTY**.

Texas Residents Add 5% Sales Tax
Add \$10.00 If Outside U.S.A.
Dealer Inquiries Welcome

Send Check or Money Order to:
APPLIED ENGINEERING
P.O. Box 798
Carrollton, TX 75006

Call (214) 492-2027
8 a.m. to 11 p.m. 7 days a week
MasterCard, Visa & C.O.D. Welcome
No extra charge for credit cards

Program listing, Ultima III Character Editor.

```

10 REM
*****
ULTIMA III CHARACTER EDITOR
*****

15 REM          BY
16 REM
17 REM
18 REM          KERRY J. LANZ
19 REM
20 REM
50 GOTO 7000
97 REM
98 REM READ 1 BYTE
99 REM
100 B$ = STR$( FN HEX(X)): IF LEN (B$) < 2 THEN B$ = "0" + B$
105 RETURN
147 REM
148 REM READ 2 BYTES
149 REM
150 GOSUB 100:BB$ = B$
155 X = X + 1: GOSUB 100
160 B$ = BB$ + B$: RETURN
197 REM
198 REM CURSOR MOVEMENT
199 REM
200 IF V < 1 AND H = 11 THEN V = V2:H = 31: GOTO 220
205 IF V < 1 AND H = 31 THEN V = V1:H = 11: GOTO 220
210 IF V > V1 AND H = 11 THEN V = 1:H = 31: GOTO 220
215 IF V > V2 THEN V = 1:H = 11
220 VTAB V + V3: HTAB H
225 INVERSE : PRINT ">": NORMAL
230 VTAB 23: HTAB 20: POKE KB,0
235 GET K$:K = ASC (K$)
240 IF K = 13 THEN POP : RETURN
245 IF K = 32 THEN RETURN
250 VTAB V + V3: HTAB H: PRINT " "
255 IF K = 8 THEN V = V - 1: GOTO 200
260 IF K = 21 THEN V = V + 1: GOTO 200
265 GOTO 220
297 REM
298 REM CHANGE 1 BYTE
299 REM
300 VTAB 22: HTAB 1: CALL - 868
305 HTAB 5: INPUT "NEW VALUE (0-99): ";K$
310 K = VAL (K$): IF K < 0 OR K > 99 THEN 300
315 POKE X, FN DEC(K)
320 VTAB 22: HTAB 1: CALL - 868
325 GOSUB 100
330 VTAB V + V3: HTAB H + 1
335 PRINT B$: RETURN
347 REM
348 REM CHANGE 2 BYTES
349 REM
350 VTAB 22: HTAB 1: CALL - 868
355 HTAB 5: INPUT "NEW VALUE (0-9999): ";K$
360 IF VAL (K$) < 0 OR VAL (K$) > 9999 THEN 350
365 IF LEN (K$) < 4 THEN K$ = "0" + K$: GOTO 365
370 POKE X, FN DEC( VAL ( LEFT$ (K$,2)))
375 POKE X + 1, FN DEC( VAL ( RIGHT$ (K$,2)))
380 VTAB 22: HTAB 1: CALL - 868
385 GOSUB 150: VTAB V + V3
390 HTAB H + 1: PRINT B$: RETURN
397 REM
398 REM CHANGE LETTER
399 REM
400 VTAB 22: HTAB 1: CALL - 868
405 HTAB 4: PRINT "NEW VALUE (";B$;")":
410 GET K$: PRINT K$
415 FOR K = 1 TO LEN (B$)
420 IF K$ = MID$( B$,K,1) THEN POKE X, ASC (K$):K = LEN (B$)
425 NEXT
430 K$ = CHR$( PEEK (X))
435 VTAB 22: HTAB 1: CALL - 868
440 VTAB V + V3: HTAB H + 1
445 PRINT K$: RETURN
497 REM
498 REM CHOICES
499 REM
500 VTAB 21: PRINT "CHOICES:";
505 PRINT SPC( 3): INVERSE : PRINT "<-": NORMAL
510 PRINT SPC( 3): INVERSE : PRINT ">-": NORMAL
515 PRINT SPC( 3): INVERSE : PRINT "<SPACE>": NORMAL
520 PRINT SPC( 3): INVERSE : PRINT "<RETURN>": NORMAL
525 RETURN
995 REM
996 REM *****
997 REM * ANALYZE CHARACTER *
998 REM *****
999 REM
1000 HOME
1010 X = LOC + 15: GOSUB 100:T$ = B$
1015 H$ = CHR$( PEEK (LOC + 17))
1020 X = LOC + 18: GOSUB 100:SG$ = B$
1025 X = LOC + 19: GOSUB 100:D$ = B$
1030 X = LOC + 20: GOSUB 100:Q$ = B$
1035 X = LOC + 21: GOSUB 100:WM$ = B$

```

Listing continued.

EXODUS CHARACTER: STRIDER

RACE: E	EXPERIENCE: 0000
CLASS: F	FOOD: 0100
SEX: 0	GOLD: 0100
HEALTH: 6	HITS NOW: 0100
	TOTAL HITS: 0100
STRENGTH: 15	MAGIC PTS: 00
DEXTERITY: 10	TORCHES: 00
I Q : 13	GEMS: 00
WISDOM: 12	KEYS: 00
	POWDERS: 00
ARMOR	WEAPONS
EQUIPPED #0	EQUIPPED #0
CLOTH: 01	DAGGER: 01
LEATHER: 00	MACE: 00
CHAIN: 00	SLING: 00
PLATE: 00	AXE: 00
+2 CHAIN: 00	BOW: 00
+2 PLATE: 00	SWORD: 00
EXOTICS: 00	2-HND SWORD: 00
	+2 AXE: 00
	+2 BOW: 00
	+2 SWORD: 00
	GLOVES: 00
	+4 AXE: 00
	+4 BOW: 00
	+4 SWORD: 00
	EXOTICS: 00
MARKS	CARDS
FORCE 0	LOVE 0
FIRE 0	SOL 0
SNAKE 0	MOONS 0
KINGS 0	DEATH 0

Figure 3. Printout of a newly created character. It (sex is "other") is an elf fighter, with no arms or weapons, experience, nor marks or cards. Gold, food, and hit points are low. The four basic attributes are low.

EXODUS CHARACTER: STRIDER

RACE: H	EXPERIENCE: 8000
CLASS: R	FOOD: 9500
SEX: M	GOLD: 5000
HEALTH: 6	HITS NOW: 9000
	TOTAL HITS: 9000
STRENGTH: 75	MAGIC PTS: 50
DEXTERITY: 75	TORCHES: 99
I Q : 75	GEMS: 99
WISDOM: 75	KEYS: 99
	POWDERS: 99
ARMOR	WEAPONS
EQUIPPED #0	EQUIPPED #0
CLOTH: 01	DAGGER: 01
LEATHER: 01	MACE: 01
CHAIN: 01	SLING: 01
PLATE: 01	AXE: 01
+2 CHAIN: 01	BOW: 01
+2 PLATE: 01	SWORD: 01
EXOTICS: 05	2-HND SWORD: 01
	+2 AXE: 01
	+2 BOW: 01
	+2 SWORD: 01
	GLOVES: 01
	+4 AXE: 01
	+4 BOW: 01
	+4 SWORD: 01
	EXOTICS: 05
MARKS	CARDS
FORCE 1	LOVE 1
FIRE 1	SOL 1
SNAKE 1	MOONS 1
KINGS 1	DEATH 1

Figure 4. The same character as in Figure 3, just a few minutes later. Strider has become a hero. "He" is now a human ranger with great attributes. All values are high; he has lots of gold, keys, gems, etc.; all armor and weaponry are available; and he has all four marks and all four cards.

Listing continued.

```

1040 R$ = CHR$ ( PEEK (LOC + 22))
1045 C$ = CHR$ ( PEEK (LOC + 23))
1050 S$ = CHR$ ( PEEK (LOC + 24))
1055 X = LOC + 25: GOSUB 100:M$ = B$
1060 X = LOC + 26: GOSUB 150:HN$ = B$
1065 X = LOC + 28: GOSUB 150:HT$ = B$
1070 X = LOC + 30: GOSUB 150:E$ = B$
1075 X = LOC + 32: GOSUB 150:F$ = B$
1080 X = LOC + 35: GOSUB 150:G$ = B$
1085 X = LOC + 37: GOSUB 100:GM$ = B$
1090 X = LOC + 38: GOSUB 100:KY$ = B$
1095 X = LOC + 39: GOSUB 100:P$ = B$
1100 RETURN
1995 REM
1996 REM *****
1997 REM * CHARACTER SCREEN *
1998 REM *****
1999 REM
2000 TEXT : HOME : INVERSE
2005 PRINT " EXODUS CHARACTER: ";
2010 PRINT N$(N); SPC( 6): NORMAL
2015 PRINT : PRINT : POKE 34,2: RETURN
2100 GOSUB 1000: HOME
2105 PRINT SPC( 5);"RACE: ";R$; SPC( 7);
2110 PRINT "EXPERIENCE: ";E$
2115 PRINT SPC( 4);"CLASS: ";C$; SPC( 11);
2120 PRINT SPC( 2);"FOOD: ";F$
2125 PRINT SPC( 6);"SEX: ";S$; SPC( 7);
2130 PRINT SPC( 6);"GOLD: ";G$
2135 PRINT SPC( 3);"HEALTH: ";H$; SPC( 7);
2140 PRINT SPC( 2);"HITS NOW: ";HN$
2145 PRINT SPC( 19);"TOTAL HITS: ";HT$
2150 PRINT " STRENGTH: ";SG$; SPC( 7);
2155 PRINT "MAGIC PTS: ";M$
2160 PRINT "DEXTERITY: ";D$; SPC( 9);
2165 PRINT "TORCHES: ";T$
2170 PRINT SPC( 3);"I Q : ";Q$; SPC( 12);
2175 PRINT "GEMS: ";GM$
2180 PRINT SPC( 3);"WISDOM: ";WM$; SPC( 9);
2185 PRINT " KEYS: ";KY$
2190 PRINT SPC( 22);"POWDERS: ";P$
2195 RETURN
2995 REM
2996 REM *****
2997 REM * ARMOR & WEAPONS *
2998 REM *****
2999 REM
3000 PRINT SPC( 5);
3005 INVERSE : PRINT " ARMOR ";
3010 NORMAL : PRINT SPC( 9);
3015 INVERSE : PRINT " WEAPONS ": NORMAL
3020 E1 = PEEK (LOC + 40):E2 = PEEK (LOC + 48)
3025 FOR K = 1 TO 7:X = LOC + 40 + K
3030 GOSUB 100:A$(K) = B$: NEXT
3035 FOR K = 1 TO 15:X = LOC + 48 + K
3040 GOSUB 100:W$(K) = B$: NEXT
3045 PRINT " EQUIPPED #";E1; SPC( 9);
3050 PRINT "EQUIPPED #";E2
3055 PRINT SPC( 4);"CLOTH: ";A$(1);
3060 PRINT SPC( 10);"DAGGER: ";W$(1)
3065 PRINT SPC( 2);"LEATHER: ";A$(2);
3070 PRINT SPC( 12);"MACE: ";W$(2)
3075 PRINT SPC( 4);"CHAIN: ";A$(3);
3080 PRINT SPC( 11);"SLING: ";W$(3)
3085 PRINT SPC( 4);"PLATE: ";A$(4);
3090 PRINT SPC( 13);"AXE: ";W$(4)
3095 PRINT " +2 CHAIN: ";A$(5);
3100 PRINT SPC( 13);"BOW: ";W$(5)
3105 PRINT " +2 PLATE: ";A$(6);
3110 PRINT SPC( 11);"SWORD: ";W$(6)
3115 PRINT SPC( 2);"EXOTICS: ";A$(7);
3120 PRINT SPC( 5);"2-HND SWORD: ";W$(7)
3125 PRINT SPC( 23);"+2 AXE: ";W$(8)
3130 PRINT SPC( 23);"+2 BOW: ";W$(9)
3135 PRINT SPC( 21);"+2 SWORD: ";W$(10)
3140 PRINT SPC( 23);"GLOVES: ";W$(11)
3145 PRINT SPC( 23);"+4 AXE: ";W$(12)
3150 PRINT SPC( 23);"+4 BOW: ";W$(13)
3155 PRINT SPC( 21);"+4 SWORD: ";W$(14)
3160 PRINT SPC( 22);"EXOTICS: ";W$(15)
3165 RETURN
3995 REM
3996 REM *****
3997 REM * MARKS & CARDS *
3998 REM *****
3999 REM
4000 PRINT SPC( 3);
4005 INVERSE : PRINT " MARKS ";
4010 NORMAL : PRINT SPC( 12);
4015 INVERSE : PRINT " CARDS "
4020 NORMAL : PRINT
4025 B = PEEK (LOC + 14)
4030 FOR K = 7 TO 0 STEP - 1
4035 MC(K + 1) = INT (B / (2 ^ K))
4040 B = B - MC(K + 1) * 2 ^ K: NEXT
4045 PRINT SPC( 3);"FORCE"; SPC( 3);MC(5);
4050 PRINT SPC( 12);"LOVE"; SPC( 3);MC(1)
4055 PRINT SPC( 4);"FIRE"; SPC( 3);MC(6);

```

Listing continued.

Circle 82 on Reader Service card.

Strictly
Soft Ware



Fly into Spring With Strictly Soft Ware

Send for free catalog today.

Strictly Soft Ware 1-614-587-2938

To receive your free catalog right away, send this coupon to the address below. Do you want our ☐ Apple or ☐ IBM Catalog?

NAME _____

STREET _____

CITY _____

STATE _____

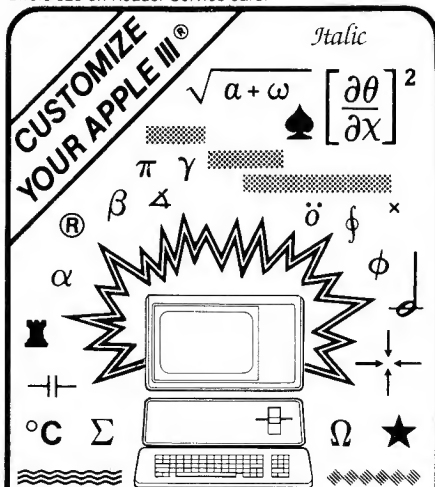
ZIP _____

()
PHONE _____

Strictly Soft Ware
P.O. Box 338
Granville, OH 43023

Strictly
Soft Ware

IC



with CustomFONT

**Character, Symbol, and Font Design
for your Apple III and Graphics Printer**

Design, display and print special characters, symbols, logos, formulae, graphics, and special fonts in word processing and spreadsheets • Enhance your own programs and games with flashing characters, unique displays, and distinctive reports • Built-in fontfile utilities and character set printouts • Fully documented and fun to use • Extends the capabilities of your Apple III and graphics printer 1000 percent! • Requires 256k and Epson, IDS 4/560, Prism, Prowriter, or Apple DMP.

Only \$149.00. Send check or money order to:

Swenson
The Solution Company

SWENSON ASSOCIATES, INC.
45 Newbury Street
Boston, MA 02116
(617) 267-3632

FREE Demo Disk!



☐ Please send CustomFONT
(payment enclosed)

☐ Please send more information
and Demo Disk

Name _____

Street _____

City _____

State _____ Zip _____

Phone _____

Dealer inquiries welcome

(Massachusetts residents add 5% sales tax)

Listing continued.

```

4060 PRINT SPC( 13);"SQL"; SPC( 3);MC(2)
4065 PRINT SPC( 3);"SNAKE"; SPC( 3);MC(7);
4070 PRINT SPC( 11);"MOONS"; SPC( 3);MC(3)
4075 PRINT SPC( 3);"KINGS"; SPC( 3);MC(8);
4080 PRINT SPC( 11);"DEATH"; SPC( 3);MC(4)
4085 RETURN
4995 REM
4996 REM *****
4997 REM * MAIN MENU *
4998 REM *****
4999 REM
5000 GOSUB 2000
5005 LOC = BASE + ((N - 1) * 64)
5010 HOME
5015 PRINT : PRINT "YOUR CHOICES ARE:": PRINT
5020 PRINT " 1. CHARACTER VALUES"
5025 PRINT " 2. ARMOR & WEAPONS"
5030 PRINT " 3. MARKS & CARDS"
5035 PRINT " 4. PRINT OUT CHARACTER"
5040 PRINT "<RET> RETURN TO ROSTER"
5045 VTAB 22: HTAB 20
5050 POKE KB,0: GET K$
5055 K = ASC (K$): IF K = 13 THEN 6000
5060 IF K < 49 OR K > 52 THEN 5045
5065 K = K - 48
5070 ON K GOSUB 5200,5500,5800,5900
5075 GOTO 5010
5195 REM
5196 REM *****
5197 REM * CHANGE CHARACTER *
5198 REM *****
5199 REM
5200 HOME : GOSUB 2100: GOSUB 500
5205 V1 = 9:V2 = 10:V3 = 2:V = 1:H = 11
5210 GOSUB 220: IF H = 31 THEN 5265
5215 ON V GOSUB 5225,5230,5235,5240,5220,5245,5250,5255,5260
5220 GOTO 5210
5225 X = LOC + 22:B$ = RR$: GOTO 400
5230 X = LOC + 23:B$ = CC$: GOTO 400
5235 X = LOC + 24:B$ = SS$: GOTO 400
5240 X = LOC + 17:B$ = HH$: GOTO 400
5245 X = LOC + 18: GOTO 300
5250 X = LOC + 19: GOTO 300
5255 X = LOC + 20: GOTO 300
5260 X = LOC + 21: GOTO 300
5265 ON V GOSUB 5275,5280,5285,5290,5295,5300,5305,5310,5315,5320
5270 GOTO 5210
5275 X = LOC + 30: GOTO 350
5280 X = LOC + 32: GOTO 350
5285 X = LOC + 35: GOTO 350
5290 X = LOC + 26: GOTO 350
5295 X = LOC + 28: GOTO 350
5300 X = LOC + 25: GOTO 300
5305 X = LOC + 15: GOTO 300
5310 X = LOC + 37: GOTO 300
5315 X = LOC + 38: GOTO 300
5320 X = LOC + 39: GOTO 300
5495 REM
5496 REM *****
5497 REM * CHANGE ARMS *
5498 REM *****
5499 REM
5500 HOME : GOSUB 3000: GOSUB 500
5505 V1 = 7:V2 = 15:V3 = 4:V = 1:H = 11
5510 GOSUB 220: IF H = 31 THEN 5520
5515 X = LOC + 40 + V: GOSUB 300: GOTO 5510
5520 X = LOC + 48 + V: GOSUB 300: GOTO 5510
5795 REM
5796 REM *****
5797 REM * CHANGE MARKS/CARDS *
5798 REM *****
5799 REM
5800 HOME : GOSUB 4000: GOSUB 500
5805 V1 = 4:V2 = 4:V3 = 4:V = 1:H = 11
5810 GOSUB 220: IF H = 31 THEN 5820
5815 MC(V + 4) = NOT MC(V + 4): GOTO 5825
5820 MC(V) = NOT MC(V)
5825 B = 0
5830 FOR K = 1 TO 8
5835 B = B + MC(K) * 2 ^ (K - 1)
5840 NEXT : POKE (LOC + 14),B
5845 VTAB V + 4: HTAB H + 1
5850 IF H = 11 THEN PRINT MC(V + 4): GOTO 5810
5855 PRINT MC(V): GOTO 5810
5895 REM
5896 REM *****
5897 REM * PRINT OUT *
5898 REM *****
5899 REM
5900 VTAB 22: HTAB 1
5905 PRINT "->START PRINTER AND PRESS ANY KEY<-";
5910 POKE KB,0: GET K$
5915 PR# 1
5920 GOSUB 2000: GOSUB 2100
5925 PRINT : GOSUB 3000
5930 PRINT : GOSUB 4000
5935 PR# 0

```

Listing continued.

Listing continued.

```

5940 GOSUB 2000: RETURN
5995 REM
5996 REM *****
5997 REM * ROSTER *
5998 REM *****
5999 REM
6000 TEXT : HOME
6005 INVERSE : PRINT SPC( 5);"ULTIMA III: EXODUS  CHARACTERS"; SPC( 5)
6010 NORMAL : PRINT : PRINT
6015 FOR K = 1 TO 4
6020 HTAB 10: PRINT K;".  ";N$(K)
6025 NEXT
6030 IF N$(1) = ">NO CHARACTER<" THEN PRINT : PRINT "PLEASE FORM A PARTY
AND TRY AGAIN.": END
6035 PRINT : PRINT "YOUR CHOICES:": PRINT
6040 PRINT " 1-4  CHOOSE A CHARACTER TO MODIFY"
6045 PRINT "<RETURN> MAKE CHANGES PERMANENT"
6050 PRINT "<ESCAPE> EXIT PROGRAM"
6055 VTAB 22: HTAB 20: POKE KB,0
6060 GET K$:K = ASC (K$)
6065 IF K = 13 THEN POKE 47092,2: CALL 768: POKE 47092,1: GOTO 6055
6070 IF K = 27 THEN HOME : END
6075 IF K < 49 OR K > 52 THEN 6055
6080 N = K - 48
6085 IF N$(N) = ">NO CHARACTER<" THEN 6055
6090 GOTO 5000
6995 REM
6996 REM *****
6997 REM * INITIALIZATION *
6998 REM *****
6999 REM
7000 HIMEM: 38000
7005 DIM W$(15)
7010 POKE 768,32: POKE 769,227: POKE 770,3
7015 POKE 771,76: POKE 772,217: POKE 773,3
7020 POKE 47083,0: POKE 47091,0: POKE 47092,1
7025 BASE = 38000: REM RAM CHARACTER LOCATION
7030 POKE 47088,BASE - INT (BASE / 256) * 256
7035 POKE 47089, INT (BASE / 256)
7040 POKE 47084,3: POKE 47085,6: REM DISK CHARACTER LOCATION
7045 DEF FN HEX(X) = INT ( PEEK (X) / 16) * 10 + ( PEEK (X) - INT (
PEEK (X) / 16) * 16)
7050 DEF FN DEC(X) = ( INT (X / 10) * 16) + (X - INT (X / 10) * 10)
7055 HH$ = "GPDA"
7060 RR$ = "HEDBF"
7065 CC$ = "FCWTPBLIDAR"
7070 SS$ = "MFO"
7075 KB = - 16384
7095 REM
7096 REM *****
7097 REM * TITLE PAGE *
7098 REM *****
7099 REM
7100 TEXT : HOME
7105 FOR K = 1 TO 5: HTAB 10
7110 INVERSE : PRINT SPC( 20): NORMAL
7115 PRINT : NEXT
7120 VTAB 2: HTAB 15
7125 K$ = "ULTIMA III": GOSUB 7170
7130 VTAB 4: HTAB 12
7135 K$ = "CHARACTER EDITOR": GOSUB 7170
7140 VTAB 10:K$ = "THIS PROGRAM LETS YOU MODIFY YOUR PARTY OF 4 EXODUS
CHARACTERS.  MAKE SURE YOU": GOSUB 7175
7145 K$ = "HAVE AT LEAST 1 CHARACTER IN THE PARTY.": GOSUB 7175
7150 FOR K = 1 TO 1500: NEXT : PRINT : PRINT
7155 K$ = "INSERT SCENARIO/DUPLICATE PLAYER MASTER AND PRESS ANY KEY.":
GOSUB 7175
7160 VTAB 20: HTAB 20
7165 POKE KB,0: GET K$: GOTO 7200
7170 INVERSE
7175 FOR K = 1 TO LEN (K$)
7180 PRINT MID$( K$,K,1);
7185 X = PEEK ( - 16336) + PEEK ( - 16336)
7190 NEXT : NORMAL : PRINT : RETURN
7197 REM
7198 REM READ DISK
7199 REM
7200 CALL 768
7205 FOR K = 1 TO 4
7210 LOC = BASE + ((K - 1) * 64)
7215 N$(K) = "": REM NULL STRING
7220 FOR L = 0 TO 13
7225 N$(K) = N$(K) + CHR$( PEEK (LOC + L))
7230 NEXT
7235 IF LEFT$( N$(K),1) = CHR$( 0) THEN N$(K) = ">NO CHARACTER<"
7240 NEXT
7245 GOTO 6000

```

Circle 6 on Reader Service card

APPLE SOFTWARE SPECIALS!

\$1.00 credit for phone orders over \$100.00

EDUCATIONAL (OUR SPECIALTY)

	MATH	LIST	SPECIAL
Addition Magician	34.95	24.86	
Algebra Arcade	49.95	35.96	
Factor Blast	29.95	21.66	
Hey Taxi!	39.95	28.56	
Number Farm	29.95	21.66	
Space Math	49.95	35.96	

ENGLISH

Alphabet Circus	29.95	21.66	
Crossword Magic 2.0	49.95	35.96	
Extra Extra!	39.95	28.56	
Homeword	69.95	50.76	
Key Lingo	39.95	28.56	
Kidwriter	34.95	24.86	
That's My Story	59.95	43.36	
Word Attack!	49.95	35.96	

OTHER

Biology Facts	39.95	28.56	
Bookends	124.95	90.26	
Game Show	39.95	28.56	
Game of the States	39.95	28.56	
Go to the Head of Class	39.95	28.56	
Picture Writer	39.95	28.56	
Speedy Spides	34.95	24.86	
Micro Habitat	39.95	28.56	
SAT (Harcourt Brace)	79.95	58.16	
SAT (Krell)	299.95	252.96	
Trains	39.95	28.56	
U.S. Government Facts	39.95	28.56	
World History	39.95	28.56	

Ask for FREE price list

Educators: ask for special educational catalog

HARDWARE

Gibson Light Pen	249.95	196.96	
Hayes Mach III Joystick (II+ or Iie)	54.95	39.66	
Maxell Disks	51.00	29.00	
Ramcard (Microsoft)	99.95	75.96	
Wico Analog Joystick	49.95	35.96	
Wildcard 2	139.95	110.19	

MISCELLANEOUS

Chess 7.0 (Odesta)	69.95	50.76	
Eating Machine	49.95	35.96	
Ess. Data Dup. (EDD)	79.95	58.16	
Flight Simulator II	49.95	38.96	
G.P.L.E.	49.95	35.96	
Graphics Department	124.95	90.46	
Graphics Magician	59.95	43.36	
Inspector	59.95	43.36	
Jane	295.00	215.26	
Joust	34.95	28.76	
Locksmith 5.0	99.95	77.96	
Phi Beta Filer	49.95	35.96	
Pole Position	34.95	28.76	
Queen of Hearts	34.95	24.86	
Questron	49.95	35.96	
Sorcerer	49.95	35.96	
Think Tank (II+ or Iie)	150.00	108.96	
Time is Money	99.95	71.96	



C.O.D. • M.O. • Cert. Checks • School P.O.
 • VISA • MasterCard • Checks Allow 2 Weeks
 • N.Y.S. Res. Add Sales Tax • US Orders
 Under \$150. Add \$2.00 P & H • All Canadian,
 US Funds \$3.00 P & H • Foreign, Charges Only,
 Min. P & H \$7.00

**Box 525, Dept. J
 East Setauket, N.Y. 11733
 (516) 751-2535**

ANNOUNCING

the premiere of

jr[®]

Learning to use your IBM PCjr becomes easy and fun with jr magazine. Because jr keeps things simple, the whole family will *learn and understand while they enjoy themselves*.

jr will explain how the PCjr works and guide you step-by-step in setting up your system. Most of all jr will answer your most important questions month after month...like

- **What can I use my PCjr for?** jr magazine will teach you how to prepare household budgets, balance your checkbooks, do your taxes and organize schedules and lists.

- **What about the kids?** From kindergarten to college, jr helps the kids with educational programs in every subject area.

- **Are there more serious uses for PCjr?** Yes! You'll improve your own business skills by learning about word processing, spreadsheets and graphics.

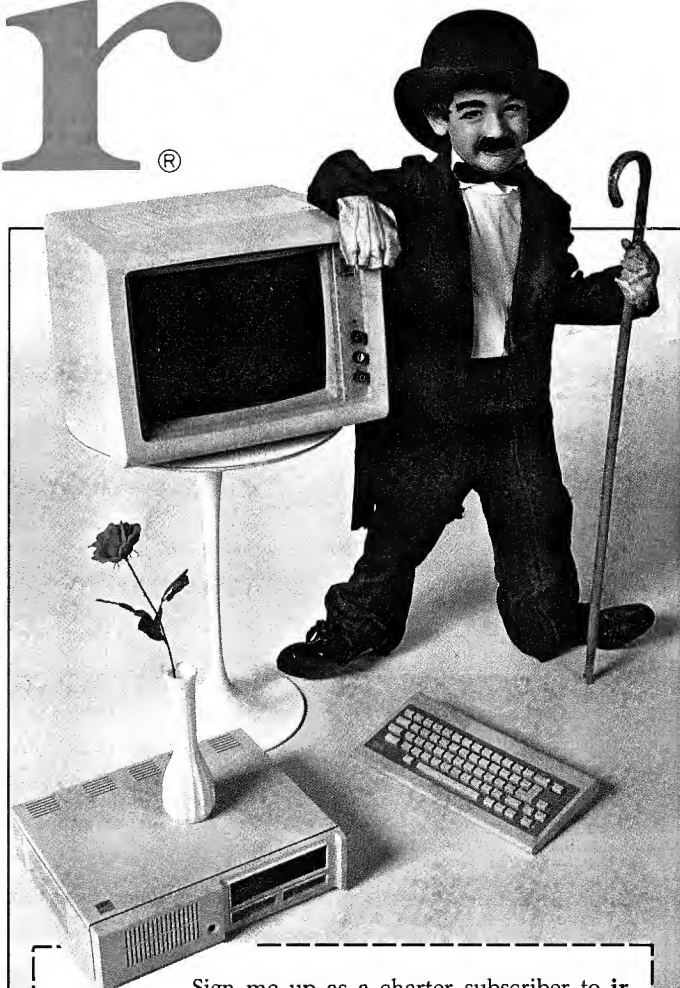
- **What about having fun with PCjr?** Relax and enjoy all the latest games with your whole family.

Plus:

- **What programs should I choose for the PCjr?** jr magazine will tell you what programs on the market will run on the PCjr, and which ones won't. Plus what new programs are on the way. jr will evaluate them before you buy.

Order your subscription to jr today and you'll get the special charter subscription rate of \$14.97. That's 25% off the basic subscription rate! Plus, with your pre-payment of check, American Express, Visa or Mastercard we'll send you a FREE issue making a total of 13 issues for \$14.97.

Take advantage of this incredible charter subscription offer. Mail the attached card, the coupon or call TOLL FREE 1-800-258-5473. In New Hampshire call 1-924-9471... TODAY!



Sign me up as a charter subscriber to jr.
I understand that with prepayment of check or credit card I'll receive a FREE issue making a total of 13 issues for \$14.97. Save \$5.00 off the basic rate!

☐ CHECK/MO ☐ MC ☐ AE ☐ VISA ☐ BILL ME

Card # _____ Exp. Date _____

Signature _____

Name _____

Address _____

City _____ State _____ Zip _____

Canada & Mexico \$17.97, 1 year only, US funds drawn on US bank.
Foreign Surface \$34.97, 1 year only, US funds drawn on US bank.
Foreign airmail, please inquire. Please allow 6-8 weeks for delivery.

346F5

jr For IBM's Home Computer
Box 903 Farmingdale, NY 11737

GRAPH YOUR SAVINGS

SPECIALS OF THE MONTH

Micromodem IIe w/Smartcom	\$259
Volksmodem	\$ 64
Grapppler +	\$129
Koala Touch Tablet	\$ 89
Chalkboard Power Pad w/Starter Kit	\$109
Apple II Computer Cover	\$ 6.50
Flip & File (holds 50)	\$22.50
Verbatim Disks S/D	\$26.00
Verbatim Twin Pack	\$ 6.00
Wico Analog Joystick	\$39.00

HARDWARE SPECIALS

Printers

C Itoh

8510 Prowriter	\$399
F10 Starwriter	\$1349
F10 Printmaster	\$1529

Okidata

ML82A	Call
ML83A	Call
ML84P	Call
ML84S	Call
ML92P	Call
ML93P	Call

Monitors

Amdek Color I+	\$315
Amdek 300 Green	\$169
Amdek 310A Amber	\$189
Leading Edge Gorilla	
Hi-Res Green/	
Amber 12"	\$ 89

RECREATION

Creature Creator	\$ 29
Sargon III	\$ 36
Witness	\$ 36
Planetfall	\$ 36
Starcross	\$ 29
Zork I, II, III	Ea. \$ 29
Enchanter	\$ 36
Deadline	\$ 36
Suspended	\$ 36
The Quest	\$ 17
Zero Gravity Pinball	\$ 22
Sammy Lightfoot	\$ 29
Apple Cider Spider	\$ 25
Sargon II	\$ 25
Crypt of Medea	\$ 25
Knight of Diamonds	\$ 25
Wizardry	\$ 35
Legacy of Lylgamyn	\$ 29
Lode Runner	\$ 25
Choplifter	\$ 25
Temple of Apshai	\$ 29
Castle of Wolfenstein	\$ 29
Spare Change	\$ 29
Tigers in The Snow	\$ 29
Flight Simulator II	\$42
Geopolitique 1990	\$29
J-Bird	\$27
Broadsides	\$29
Eagles	\$29
Oil Barons	\$39

EDUCATION

Sticky Bear Numbers	\$ 30
Sticky Bear ABC/	\$ 30
In Search of the	
Most Amazing Thing	\$ 29
Hey Diddle Diddle/	
Spinnaker	\$ 22
Snooper Troops #1/	
Spinnaker	\$ 32
Snooper Troops #2/	
Spinnaker	\$ 32
Delta Drawing/	
Spinnaker	\$ 35
Story Machine/Spinnaker	\$ 27
Face Maker/Spinnaker ..	\$ 27
Rhymes & Riddles/	
Spinnaker	\$ 27
PLATO Whole Numbers ..	\$ 39
PLATO Decimals	\$ 39
PLATO Fractions	\$ 39
Alien Counter/	
Face Flash/Milliken	\$ 26
Gulp & Arrow	
Graphics/Milliken	\$ 26
Juggles Rainbow/	
Learning Co.	\$ 22
Bumble Games/	
Learning Co.	\$ 29
Bumble Plot/	
Learning Co.	\$ 29
Gertrudes Secrets/	
Learning Co.	\$ 32
Gertrudes Puzzles/	
Learning Co.	\$ 32
Rocky's Boots/	
Learning Co.	\$ 36
Compu-Read/Edu-Ware ..	\$ 25
Spelling Bee w/	
Reading Primer	\$ 29
Algebra I/Edu-Ware	\$ 36
Fractions/Edu-Ware	\$ 36
Decimals/Edu-Ware	\$ 36
Master Type/Lightning ..	\$ 29
Type Attack/Sirius	\$ 29
New Step by Step/PDI ..	\$ 59
Word Attack/Davidson ..	\$ 36
Math Blaster/Davidson ..	\$ 36
Speed Reader II/Davidson	\$ 45
Spellcopter/Designware ..	\$ 27
Micro Multiplication/	
Hayden	\$ 20
Songwriter/Scarborough ..	\$ 29
Picturewriter/Scarborough	\$ 29
Koalagrams Spelling I ..	\$ 29
Spidereater/Koala	\$ 22
Mathmaze/Designware ..	\$ 29
SAT/Harcourt Brace	\$ 59

BUSINESS

BRODERBUND

The Bank Street Writer ..	\$ 49
The Bank Street Speller ..	\$ 49

CONTINENTAL SOFTWARE

The Home Accountant	\$ 48
F.C.M.	\$ 62
G/L, A/R, A/P,	
Payroll	Ea. \$159
CPA Module No. 5-	
Property Mgmt.	\$305

HOWARD SOFTWARE

Creative Financing	\$159
Real Estate Analyzer II ..	\$139
Tax Preparer 1983	\$199

IUS

Professional Easywriter ..	\$125
Original Easywriter	\$ 72
Pro. Easywriter/	
Mailer Combo	\$215
Orig. Easywriter/	
Mailer Combo	\$ 99

MONOGRAM

Dollars & Sense	\$ 72
-----------------------	-------

MICRO LAB

The Tax Manager 1983	\$129
Data Factory 5.0	\$215
Payroll Manager	\$215

MICRO PRO (All Reg. Z-80)

Wordstar	\$259
Infostar	\$259
Reportstar	\$229
4 Pak Word-Mail-	
Spell-Star	\$459

SIERRA ON-LINE

Homework	\$ 36
Screenwriter II	\$ 95
The Dictionary	\$ 72
Screenwriter Professional	\$145
The General Manager II ..	\$169

PBL CORPORATION

Personal Investor	\$105
-------------------------	-------

SILICON VALLEY

Word Handler II	\$ 45
List Handler	\$ 39
"The Handlers"	\$ 85

SOFTWARE PUBLISHING

PFS: File	\$ 85
PFS: Report	\$ 85
PFS: Graph	\$ 85

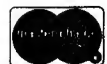


Computer Outlet

1095 East Twain, Las Vegas, NV 89109 Mon.-Fri. 8 a.m. to 6 p.m., Sat. 9 a.m. to 5 p.m.



1-800-634-6766



Information and Inquiries:
(702) 796-0296 Order
Status: (702) 369-5523.

ORDERING INFORMATION AND TERMS: For fast delivery send cashier checks, money orders or direct bank wire transfers. Personal and company checks allow 3 weeks to clear. Charges for C.O.D. orders are \$3.00 minimum or 1% for orders over \$300. School purchase orders welcomed. Prices reflect a cash discount only and are subject to change without notice. Please enclose your phone number with any orders. **SHIPPING:** — Software: \$3.00 minimum. **SHIPPING** — Hardware: (Please call) **SHIPPING** — Foreign Orders: APD & FPO orders: \$10 minimum and 15% of all orders over \$100. Nevada residents add 5% sales tax. All goods are new and include factory warranty. Due to our low prices, all sales are final. All returns must be accompanied by a return authorization number. Call 702-369-5523 to obtain one before returning goods for replacement. Catalogs: .50¢ U.S., \$1.00 foreign.

Scout Search



by John Romero

Scout Search is a lo-res maze game and the object is for you, the Scoutmaster, to gather all of your Cub Scouts before the killer grizzly attacks them. If the grizzly grabs a Scout, he screams. If the grizzly gets you, you lose one life. (You have three lives to start with.) After you gather your Scouts, you go to the next maze. After the tenth screen, the mazes become more difficult.

I wrote Scout Search in Applesoft with a machine-language move routine

for the speed of smooth animation. I used lo-res graphics because when I wrote this game I didn't know how to make a bit-mapped shape creator utility. Bit-map animation is the animation used in the professional games on the market.

To save both programs (Applesoft and machine language), first type in the Applesoft as shown. Then, type SAVE SCOUT SEARCH. Enter the monitor by typing CALL -151 and start typing with:

```
8000: 4C 19 00 80 1C 1B 0D 0C 1E
<- RETURN key
```

Note: Make sure you type a colon after the location number and not a hyphen as in the listing. When you're done, type BSAVE SCOUT SEARCH, A\$8000,L\$31F. For details on entering hex listings, see page 92 of the *Apple IIe Reference Manual* or page 42 of the *Apple II Reference Manual*. ■

Address correspondence to John Romero at PO Box 1079, APO New York, NY 09238.


```

0 IF PEEK (32768) < > 76 THEN PRINT
  CHR$(4)"BLOODSCOUT SEARCH.O
  BU"
1 MEN = 3
2 MZ = 0
5 ST = 3
6 POKE 235,0
7 CALL 32768
8 POKE 236,0
9 TEXT : HOME : GOTO 1000
10 GR : GOTO 53
11 COLOR= RND (1) * 15: POKE 8,1

12 FOR I = 0 TO 20: VLIN 0,39 AT
  I: VLIN 0,39 AT 39 - I: POKE
  6,I + 10: POKE 7,20: CALL 333
  68: NEXT

14 FOR I = 20 TO 0 STEP - 1: COLOR=
  0: VLIN 0,39 AT I: VLIN 0,39 AT
  39 - I: POKE 6,I + 20: POKE 7
  ,15: CALL 33368: NEXT

19 MAX = 38
20 COLOR= INT ( RND (1) * 13 + 1
  ): HLIN 0,39 AT 0: HLIN 0,39 AT
  39: VLIN 0,39 AT 0: VLIN 0,39
  AT 39

30 FOR I = 0 TO MAX STEP ST: FOR
  J = 0 TO MAX STEP ST
32 C = INT ( RND (1) * 3.5 + 1)
34 IF C = 1 THEN HLIN I,I + (ST -
  1) AT J
36 IF C = 2 THEN VLIN J,J + (ST -
  1) AT I
38 NEXT : NEXT
39 COLOR= 15
40 FOR I = 1 TO 10 - PEEK (235)
41 K = INT ( RND (1) * 37 + 1):L =

```

```

  INT ( RND (1) * 37 + 1): IF
  SCRN (K,L) < > 0 THEN 41
42 PLOT K,L
44 POKE 32770 + I,K: POKE 32781 +
  I,L
50 NEXT : CALL 32822
52 IF PEEK (236) THEN MEN = MEN -
  1: POKE 236,0: IF MEN = 0 THEN
  POKE - 16368,0: GOTO 70
53 VTAB 21: PRINT "MEN: "MEN
54 VTAB 22: PRINT "SCOUTS LEFT: "
  10 - PEEK (235)" "
55 IF PEEK (235) = 10 THEN 80
60 POKE 227,10 - PEEK (235)
61 POKE 249, RND (1) * 37 + 1: POKE
  250, RND (1) * 37 + 1: POKE 2
  5, RND (1) * 37 + 1: POKE 26,
  RND (1) * 37 + 1
62 PT = PT + 10 * (10 - PEEK (235
  )): VTAB 23: PRINT "POINTS: "
  PT
63 MZ = MZ + 1: IF MZ - INT (MZ /
  10) * 10 = 0 THEN ST = ST - 1
  :MAX = 39
64 VTAB 21: HTAB 20: PRINT "MAZE:
  "MZ
69 GOTO 11
70 VTAB 21: PRINT "YOU DIED. WANN
  A PLAY AGAIN?";: GET A$: IF A
  $ = "Y" THEN RUN
71 IF A$ < > "N" THEN 70
72 TEXT : HOME : END
80 HOME : VTAB 21: PRINT "ALL YOU
  R SCOUTS GOT EATEN UP!!": PRINT
  "YOUR SCORE: "PT" MAZE: "MZ
90 PRINT "WANNA PLAY AGAIN?";: GET
  A$: IF A$ = "Y" THEN RUN

```

```

92 IF A$ < > "N" THEN 90
93 TEXT : HOME : END
1000 INVERSE : PRINT ":
  ": PRINT " SCOUT SEARCH
  ": PRINT ":
  : NORMAL : VTAB 1: HTAB 18
1002 PRINT "BY JOHN ROMERO": HTAB
  18: PRINT "COPYRIGHT (C) 1983
  ": PRINT
1004 FOR I = 1 TO 40: PRINT "-";:
  NEXT
1006 PRINT : PRINT " WELCOME TO T
  HE SCOUT SEARCH! ARE YOU RE
  ADY TO GRAB YOUR SCOUTS BEFOR
  E THE KILLER GRIZZLY DOES?
  I SURE HOPE SO!": PRINT
1008 PRINT " YOU ARE THE SCOUTMAS
  TER. YOUR JOB IS TO ROUND U
  P ALL OF YOUR LOST CUB SCOUTS
  BEFORE THE KILLER GRIZZLY GR
  ABS THEM. IF THE GRIZZLY GR
  ABS A SCOUT, YOU WILL HEAR A
  BLOOD-CURDLING SCREAM EMIT F
  ROM THE POOR SCOUT."
1010 PRINT : PRINT " ANOTHER THIN
  G, DON'T LET THE GRIZZLY CA
  TCH YOU EITHER OR YOU WILL SU
  FFER THE SAME FATE AS YOUR SC
  OUTS! THE CONTROLS FOR THE G
  AME ARE:"
1012 HTAB 20: PRINT "A": HTAB 17:
  PRINT "< -->": HTAB 20: PRINT
  "Z"
1014 PRINT "HIT ANY KEY TO START
  GAME";: GET A$: HOME : GOTO
  10

```

Listing 1. Scout Search.

```

8000- 4C 19 80 1C 1B 0D 0C 1E
8008- 08 0B 15 64 22 64 0F 0B
8010- 01 1A 20 25 0E 0D 64 14
8018- 64 20 1D 80 60 A9 01 85
8020- 1D 85 1E 85 19 85 1A A9
8028- 28 85 1F A9 26 85 FA 85
8030- F9 A9 0A 85 E3 60 20 51
8038- 80 20 F8 80 20 C4 81 20
8040- 2C 81 20 FE 81 20 66 82
8048- 20 AD 82 20 C5 82 4C 36
8050- 80 A5 19 85 1B A5 1A 85
8058- 1C A5 1D D0 21 A5 1A 38
8060- E9 01 85 1A A5 1A A4 19
8068- 20 71 F8 F0 0E A5 1A 18
8070- 69 01 85 1A A9 01 85 1D
8078- 20 03 81 4C 9C 80 A5 1A
8080- 18 69 01 85 1A A5 1A A4
8088- 19 20 71 F8 F0 0E A5 1A
8090- 38 E9 01 85 1A A9 00 85
8098- 1D 20 03 81 A5 1E D0 21
80A0- A5 19 38 E9 01 85 19 A5
80A8- 1A A4 19 20 71 F8 F0 0E
80B0- A5 19 18 69 01 85 19 A9
80B8- 01 85 1E 20 03 81 4C DF
80C0- 80 A5 19 18 69 01 85 19
80C8- A5 1A A4 19 20 71 F8 F0
80D0- 0E A5 19 38 E9 01 85 19
80D8- A9 00 85 1E 20 03 81 A9
80E0- 00 20 64 F8 A5 1C A4 1B
80E8- 20 00 F8 A9 0D 20 64 F8
80F0- A5 1A A4 19 20 00 F8 60
80F8- A4 1F A2 FF CA D0 FD 88
8100- D0 F8 60 A9 01 85 09 85

```

```

8108- 08 A9 32 85 07 A9 32 85
8110- 06 20 15 81 60 A4 07 A5
8118- 08 20 A8 FC A6 06 CA D0
8120- FD 2C 30 C0 88 D0 F0 C6
8128- 09 D0 EA 60 A5 F9 85 FB
8130- A5 FA 85 FC A5 FD C9 C1
8138- D0 1A A5 FA 38 E9 01 85
8140- FA A5 FA A4 F9 20 71 F8
8148- F0 07 A5 FA 18 69 01 85
8150- FA 4C AB 81 C9 DA D0 1A
8158- A5 FA 18 69 01 85 FA A5
8160- FA A4 F9 20 71 F8 F0 07
8168- A5 FA 38 E9 01 85 FA 4C
8170- AB 81 C9 88 D0 1A A5 F9
8178- 38 E9 01 85 F9 A5 FA A4
8180- F9 20 71 F8 F0 07 A5 F9
8188- 18 69 01 85 F9 4C AB 81
8190- C9 95 D0 17 A5 F9 18 69
8198- 01 85 F9 A5 FA A4 F9 20
81A0- 71 F8 F0 07 A5 F9 38 E9
81A8- 01 85 F9 A9 00 20 64 F8
81B0- A5 FC A4 FB 20 00 F8 A9
81B8- 0E 20 64 F8 A5 FA A4 F9
81C0- 20 00 F8 60 AD 00 C0 C9
81C8- C1 D0 03 85 FD 60 C9 DA
81D0- D0 03 85 FD 60 C9 88 D0
81D8- 03 85 FD 60 C9 95 D0 03
81E0- 85 FD 60 C9 A0 D0 03 85
81E8- FD 60 C9 98 D0 0F 2C 10
81F0- C0 AD 00 C0 10 FB C9 9B
81F8- F0 03 2C 10 C0 60 A9 0A
8200- 85 FE A6 FE BD 03 80 38
8208- E5 19 C9 02 90 04 C9 FF

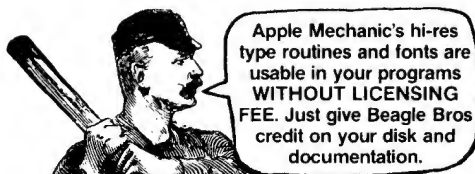
```

```

8210- 90 3D BD 0E 80 38 E5 1A
8218- C9 02 90 04 C9 FF 90 2F
8220- A9 1E 85 FF A5 FF 85 06
8228- 85 07 20 58 82 C6 FF D0
8230- F3 A9 00 20 64 F8 A6 FE
8238- BD 0E 80 BC 03 80 20 00
8240- F8 A6 FE A9 64 9D 0E 80
8248- 9D 03 80 C6 E3 E6 EB C6
8250- FE A5 FE C9 FF D0 AB 60
8258- A4 07 A6 06 CA D0 FD 2C
8260- 30 C0 88 D0 F5 60 A9 0A
8268- 85 FE A6 FE BD 0E 80 38
8270- E5 FA C9 02 90 04 C9 FF
8278- 90 2A BD 03 80 38 E5 F9
8280- C9 02 90 04 C9 FF 90 1C
8288- A9 00 20 64 F8 A6 FE BD
8290- 0E 80 BC 03 80 20 00 F8
8298- A6 FE A9 64 9D 0E 80 9D
82A0- 03 80 C6 E3 C6 FE A5 FE
82A8- C9 FF D0 BE 60 A5 E3 D0
82B0- 13 A9 64 85 FF A5 FF 85
82B8- 06 85 07 20 58 82 C6 FF
82C0- D0 F3 68 68 50 A5 F9 38
82C8- E5 19 C9 02 90 04 C9 FF
82D0- 90 3E A5 D3 80 E5 1A C9
82D8- 02 90 04 C9 FF 90 31 A9
82E0- 0F 85 FF A9 64 85 FE A5
82E8- FF 20 64 F8 A5 FA A4 F9
82F0- 20 00 F8 A5 FF 85 06 A5
82F8- FE 85 07 20 58 82 C6 FF
8300- D0 E5 A9 0F 85 FF C6 FE
8308- D0 DD A9 01 85 EC 68 68
8310- 60 28 00 00 A0 28 00 00

```

Listing 2. Scout Search machine language routine.



Apple Mechanic's hi-res type routines and fonts are usable in your programs **WITHOUT LICENSING FEE.** Just give Beagle Bros credit on your disk and documentation.

APPLE MECHANIC

HI-RES SHAPE EDITOR / TYPE FONT DISK
by BERT KERSEY

\$29.50: Includes Peeks/Pokes Chart & Tip Book #5.

SHAPE EDITOR: Keyboard-draw hi-res shapes for animation in your Applesoft programs. Access & create **proportionally-spaced hi-res Typefaces** with each character re-definable as you want. Six fonts are included on the disk. Excellent LISTable Applesoft demos show you how to animate graphics and create professional-looking Charts and Graphs.

BYTE-ZAP: Rewrite any byte on a disk for repair or alteration. Load entire sectors on the screen for inspection. **Hex/Dec/Ascii displays** and input. Educational experiments included for making trick file names, restoring deleted files, changing DOS, etc.

MORE: Useful music, text and hi-res tricks for your programs. Clear educational documentation.

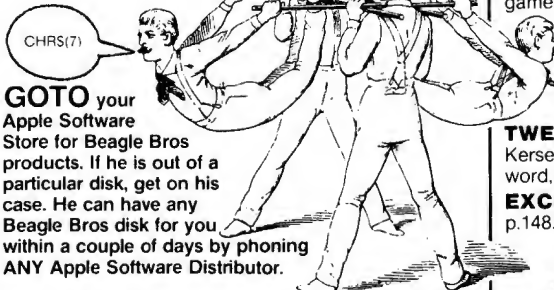
APPLE MECHANIC TYPEFACES

by BERT KERSEY

\$20.00: Includes Peeks & Pokes Chart.

26 NEW FONTS for use with Apple Mechanic programs. Many different sizes and typesets, both ordinary and **Artistic**. Every character—from A to Z to "*" to "□"—of every typeface—from "Ace" to "Zooloo"—is re-definable to suit your needs. All typefaces are **proportionally spaced** for a more professional appearance. People do notice the difference!

BEAGLE MENU: Display only the file names you want from your disks (for example, only Applesoft or only Locked files) for fast one-key cursor selection.



RUSH the following disks by First Class Mail—

<input type="checkbox"/> Alpha Plot \$39.50	<input type="checkbox"/> Frame-Up \$29.50
<input type="checkbox"/> Apple Mechanic 29.50	<input type="checkbox"/> GPLE 49.95
<input type="checkbox"/> A.M. Typefaces 20.00	<input type="checkbox"/> ProntoDOS 29.50
<input type="checkbox"/> Beagle Bag 29.50	<input type="checkbox"/> Silicon Salad 24.95
<input type="checkbox"/> Beagle BASIC 34.95	<input type="checkbox"/> Tip Disk #1 20.00
<input type="checkbox"/> DiskQuik 29.50	<input type="checkbox"/> Utility City 29.50
<input type="checkbox"/> DOS Boss 24.00	<input type="checkbox"/>
<input type="checkbox"/> Double-Take 34.95	<input type="checkbox"/> ADD ME to mailing list.
<input type="checkbox"/> Flex Type 29.50	<input type="checkbox"/> ALREADY ON mail list.

AT YOUR APPLE DEALER NOW!
Or order directly from Beagle Bros—



Visa/MasterCard or COD, call **TOLL-FREE**
Orders only / ALL 50 STATES / 24 Hours a Day
1-800-227-3800 ext. 1607

OR mail U.S. Check, Money-Order or Visa/MC#
to **BEAGLE BROS.** 8th Floor
4315 SIERRA VISTA, SAN DIEGO, CA 92103

Add \$1.50 First Class Shipping, Any-Size Order.
Overseas add \$4.00 COD add \$3.00 California add 6%
ALL ORDERS SHIPPED IMMEDIATELY.

AD#8A Circle 179 on Reader Service card.

88 **Cider** May 1984

DOS BOSS

DISK COMMAND EDITOR

by BERT KERSEY and JACK CASSIDY

\$24.00: Includes Peeks/Pokes Chart & Tip Book #2.

RENAME DOS COMMANDS & Error Messages—"Catalog" can be "Cat"; "Syntax Error" can be "Oops" or almost anything you want it to be.

PROTECT YOUR PROGRAMS. An unauthorized Save-attempt can produce a "Not Copyable" message, or any message you want. Also easy List-Prevention and other useful Apple tips and tricks. Plus one-key program-execution from catalog.

CUSTOMIZE DOS. Change the catalog Disk Volume heading to your message or title. Omit or alter catalog file codes. Fascinating documentation, tips and educational Apple experiments.

ANYONE USING YOUR DISKS (booted or not) will be using DOS the way YOU designed it.



10 LIST: LIST: LIST: FOR ZZ-PEEK(175)+PEEK
(176)*256+36 TO 3072: POKE ZZ,216: NEXT
20 FOR XXX=1 TO 2: POKE-16299,0: POKE
-16300,0: XXX=1: NEXT: REM Experiment
with different length variable names.

BEAGLE BAG

12 APPLE GAMES ON ONE DISK
by BERT KERSEY

\$29.50: Includes Peeks & Pokes Chart

COMPARE BEAGLE BAG with any single-game Locked-Up disk on the market today.

All 12 games are a blast, the price is a bargain, the instructions are crystal clear, and the disk is COPYABLE. You can even change the programs or list them to learn programming tricks by seeing how they work.

TWELVE GAMES from the Applesoft Ace, Bert Kersey—TextTrain, Wowzo, Magic Pack, Buzzword, Slippery Digits, and many many more...

EXCELLENT REVIEWS—See Jan-83 *Softalk*, p.148. Beagle Menu too: see Typefaces description.



BeagleBros
Micro Software Inc.

4315 SIERRA VISTA / SAN DIEGO, CA 92103
619-296-6400

ALL BEAGLE DISKS ARE UNLOCKED, COPYABLE AND COMPATIBLE WITH APPLE II, II+ AND IIe.*
(Don't Settle for Less!)

*DISKQUIK requires Apple IIe.

"APPLE" is a Registered Trade Mark of You-Know-Who.

NEW! SILICON SALAD

INCLUDING TIP DISK #2
by BERT KERSEY and MARK SIMONSEN

\$24.95: Includes Peeks/Pokes AND Commands Charts

MANY MINI-UTILITIES: Disk Scanner finds bad disk sectors, **Key-Clicker** adds subtle sound as you type, **DOS-Killer** adds two tracks of space to your disks, **2-Track Cat** allows up to 210 file names per disk, **Program Splitter** makes room for hi-res pix with large Applesoft programs, **Text Imprinter** transfers text to the hi-res screen, **Onerr Tell Me** prints the appropriate error message but continues program execution, **Text Screen Formatter** converts text layouts into Print statements... plus much more Apple wizardry from the boys at Beagle Bros.

MORE TIPS ON DISK: Including fantastic programming tricks from Beagle Bros Tip Books 5, 6 and 7, plus programs from Tips/Tricks Chart #1.

TWO-LINERS TOO: From our customers around the world—and elsewhere. Little mind-blowers that will teach your old Apple some new tricks!

TIP DISK #1

100 TIP BOOK TIPS ON DISK
by BERT KERSEY

\$20.00: Includes Peeks & Pokes Chart.

100 LISTABLE PROGRAMS from Beagle Bros Tip Books 1-4. Make your Apple do things it's never done! All 100 programs are LISTable and changeable for Apple experimentation.

COMMAND CHART INCLUDED: Free with each Tip Disk; an 11 x 17 poster of all Applesoft, Integer Basic & DOS Commands with Descriptions!



FLEX TYPE

(FORMERLY "FLEX TEXT")
VARIABLE-WIDTH HI-RES TEXT UTILITY
by MARK SIMONSEN

\$29.50: Includes Peeks & Pokes Chart

PRINT VARIABLE-WIDTH TEXT on both hi-res screens with normal Applesoft commands (including HTAB 1-70). Normal, expanded & compressed text with no extra hardware. (70-column text requires a monochrome monitor, not a tv).

ADD GRAPHICS TO TEXT or add Text to hi-res graphics. Run your existing Applesoft programs under Flex Type control. Fast, easy to use, and Compatible with GPLE and Double-Take.

DOS TOOL KIT* font compatibility, or use the supplied Flex Type typefaces. Select up to 9 fonts with control-key commands. A text character editor lets you redesign any Apple text character.

FRAME-UP

FAST APPLE DISPLAY UTILITY
by TOM WEISHAAR

\$29.50: Includes Peeks & Pokes Chart

PROFESSIONAL PRESENTATIONS: Turn your existing Hi-Res, Lo-Res and Text frames into attractive Apple "slide shows". **FAST** hi-res loads in 2½-seconds! Paddle or Keyboard-advance frames.

UNATTENDED SHOWS are optional, with each picture arranged and pre-programmed to display on the screen from 1 to 99 seconds. Custom **Text Screen Editor** lets you create black-and-white text "slides" and add type "live" from the keyboard during shows. Mail copies of presentations on disk to your friends and associates (or home to Mom!).

NEW! GPLE

GLOBAL PROGRAM LINE EDITOR
by NEIL KONZEN

\$49.95: Includes Peeks/Pokes Chart & Tip Book #7.

A CLASSIC APPLE PROGRAM EDITOR GPLE lets you edit Applesoft program lines FAST without awkward cursor-tracing and "escape editing".

INSERT & DELETE: GPLE works like a word processor for Applesoft program lines. You make changes instantly by jumping the cursor to the change point and inserting or deleting text. No need to trace to the end of a line before hitting Return.

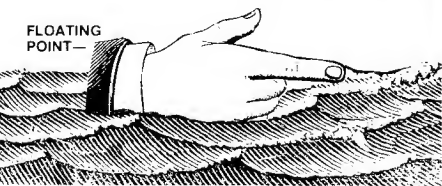
GLOBAL SEARCH & REPLACE: Find any word or variable in your programs, FAST. For example, find all lines containing a GOSUB, or edit or delete all lines with REM statements, or all occurrences of any variable. **Replace any variable,** word or character with any other. For example, change all X's to ABC's, or all "Horse" strings to "Cow".

80-COLUMN COMPATIBILITY: All edit & global features support **Apple IIe 80-column cards** and most 80-column cards on any Apple IIe, II+ or II.

DEFINABLE ESC FUNCTIONS: Define ESC plus any key to perform any task. For example, ESC-1 can catalog drive 1, ESC-L can do a "HOME: LIST", ESC-N could type an entire subroutine... Anything you want, whenever you want.

APPLE DOS MOVER: Move DOS and GPLE to Language Card (or IIe upper 16K) for an **EXTRA 10,000 Bytes** (10K) of programmable memory.

Plus APPLE TIP BOOK #7: Learn more about your Apple! Includes all new GPLE tips and tricks.



UTILITY CITY

21 PROGRAMMING UTILITIES
by BERT KERSEY

\$29.50: Includes Peeks/Pokes Chart & Tip Book #3

LIST FORMATTER prints each program statement on a new line. Loops indented with printer Page Breaks. A great Applesoft program de-bugger.

MULTI-COLUMN CATALOGS, with or without sector and file codes. Organize your disk library.

INVISIBLE and trick catalog file names. Invisible functioning commands in Applesoft programs too.

MUCH MORE: 21 utilities, including auto-post Run-number & Date in programs, alphabetize/store info on disk, convert dec to hex or Int to FP, protect and append programs, dump text to printer...

LEARN PROGRAMMING: List-able programs and informative documentation. Includes Tip Book #3. Hours of good reading & Applesoft experiments.

ALPHA PLOT

HI-RES GRAPHICS/TEXT UTILITY
by BERT KERSEY and JACK CASSIDY

\$39.50: Includes Peeks/Pokes Chart & Tip Book #4.

DRAW IN HI-RES on both Apple "pages" using easy keyboard commands OR paddles/joystick. Pre-view lines before plotting. Solid or mixed colors & Reverse (background-opposite) drawing. FAST one-keystroke circles, boxes & ellipses, filled or outlined. Add text for graphs & charts. All pix Save-able to disk, to be called from your Applesoft programs.

COMPRESS HI-RES DATA to 1/3 disk space (average) allowing more hi-res pictures per disk.

MANIPULATE IMAGES: Superimpose any two images, or RE-LOCATE any rectangular section of any drawing anywhere on either hi-res page.

HI-RES TYPE: Add text to your pictures with adjustable character-size and large-character color. Type anywhere with no Htab/Vtab limits. Type sideways too, for graphs. Includes Tip Book #4.

Beagle Bros
Micro Software Inc.

4315 SIERRA VISTA / SAN DIEGO, CA 92103
619-296-6400

ALL BEAGLE DISKS ARE UNLOCKED, COPYABLE AND COMPATIBLE WITH APPLE II, II+ AND IIe.*

(Don't Settle for Less!)

* DISKQUIK requires Apple IIe.
"APPLE" is a Registered Trade Mark of You-Know-Who.

BEAGLE BASIC
APPLESOFT ENHANCER
by MARK SIMONSEN

\$34.95: Includes Peeks/Pokes Chart & Tip Book #6. Requires Apple IIe (OR II/II+ with RAM Card).

RENAME ANY APPLESOFT COMMAND or Error Message to anything you want. For program clarification, encryption/protection or even foreign translation. Plus add optional NEW COMMANDS:

ELSE follows If-Then statements, like this:
IF X=2 THEN PRINT "YES"; ELSE PRINT "NO"

HSCRN reads color of any hi-res dot for collision testing. **SWAP X,Y** exchanges 2 variables' values. New **TONE** command writes music with no messy pokes & calls. **SCRL** scrolls text in either direction. **TXT2** lets Text Page 2 act exactly like Page 1.

PLUS: GOTO & GOSUB may precede variables, as in "GOSUB FIX" or "GOTO 4+X". Escape-mode indicated by special ESC CURSOR. Replace awkward Graphics screen-switch pokes with 1-word commands. Change ctrl-G Beep to any tone. **INVERSE REMS** too! All GPLE compatible.

1 FOR S=768 TO 773: READ A:
POKE S,A: NEXT: POKE 232,0:
POKE 233,3: DATA 1,0,4,0,5,0

2 HGR2: FOR R=0 TO 192: ROT=R:
SCALE=96: XDRAW 1 AT 140,95:
SCALE=30: XDRAW 1 AT 140,95:
S=PEEK(49200): NEXT: RUN

PRONTO-DOS

HIGH-SPEED DOS / DOS-MOVE UTILITY
by TOM WEISHAAR

\$29.50: Includes Peeks & Pokes Chart

TRIPLES THE SPEED of disk access and frees 10,000 bytes of extra memory by moving DOS.

Function	Normal	Pronto
BLOAD HI-RES IMAGE	10 sec.	3 sec.
LOAD 60-SECTOR PROGRAM	16 sec.	4 sec.
SAVE 60-SECTOR PROGRAM	24 sec.	9 sec.
BLOAD LANGUAGE CARD	13 sec.	4 sec.

(Text Files: No Change)

Boot the Pronto disk or your updated disks, created with the normal INIT command. Compatible with all DOS Commands, GPLE, Double-Take, DOS Boss, DiskQuik and almost all unprotected programs.

MOVE DOS to your Language Card, RAM Card, or standard Apple IIe upper 16K, freeing up **10,000 EXTRA BYTES** of memory for your programs.

15 EXTRA SECTORS per disk. Catalog Free-Space displayed every time you catalog a disk.

TYPE-COMMAND ("TYPE filename") prints contents of sequential Text Files on screen or printer.

NEW! DISKQUIK

DISK DRIVE EMULATOR
by HARRY BRUCE and GENE HITE

\$29.50: Includes Peeks & Pokes Chart

Requires Apple IIe with Extended 80-column Card.

ACTS LIKE A DISK DRIVE in Slot 3, but much faster, quieter, more reliable and \$350+ cheaper! Enjoy the benefits of a 2nd (or 3rd or 4th...) drive at less than 1/10th the price. Catalogs normally with "CATALOG, S3" command. Load & Save any kind of files into RAM with normal DOS commands.

SILENT AND FAST: Since no moving parts are involved, DiskQuik operates silently and at super-high speeds. See it to believe it. Your Apple IIe's Extended 80-column Card (required) can hold about half the amount of data as a 5 1/4" floppy disk!

MANY USES: For example, auto-load often-used files like FID etc., etc., into RAM when you boot up, so they are always available when you need them. Copy files from RAM onto disk and vice versa, just as if a disk drive were connected to slot #3.

FRIENDLY & COMPATIBLE with 80-column display, GPLE, ProntoDOS, and all normal Applesoft and DOS commands and procedures. Will not interfere with Apple IIe "Double Hi-Res" graphics.

GOTO any Software Store for Beagle Bros. If they are out of a particular disk, remember to get on the stick, and call Beagle Bros. 619-296-6400. Or write to Beagle Bros. 4315 Sierra Vista, San Diego, CA 92103. Distributors everywhere.

DOUBLE-TAKE

2-WAY-SCROLL/MULTIPLE UTILITY
by MARK SIMONSEN

\$34.95: Includes Peeks/Pokes AND Tips/Tricks Charts.

2-WAY SCROLLING: Listings & Catalogs scroll Up AND Down, making file names and program lines much easier to access. Change the Catalog or List scroll-direction at will, with Apple's Arrow keys.

80-COLUMN COMPATIBLE: All features support IIe and most other 80-column cards.

BETTER LIST FORMAT: Each program statement lists on a new line for FAST program tracing & de-bugging. Printer-compatible; any column-width.

VARIABLE-DISPLAY: Displays all of a program's strings and variables with current values.

CROSS-REFERENCE: Sorts and displays line numbers where each variable & string appears.

AUTO-LINE-NUMBER, Hex/Dec Converter, better Renumer/Append, Program Stats, Change Cursor, Space-On-Disk. GPLE/Pronto compatible.

<input type="checkbox"/> Alpha Plot	\$39.50	<input type="checkbox"/> Frame-Up	\$29.50
<input type="checkbox"/> Apple Mechanic	29.50	<input type="checkbox"/> GPLE	49.95
<input type="checkbox"/> A.M. Typefaces	20.00	<input type="checkbox"/> ProntoDOS	29.50
<input type="checkbox"/> Beagle Bag	29.50	<input type="checkbox"/> Silicon Salad	24.95
<input type="checkbox"/> Beagle BASIC	34.95	<input type="checkbox"/> Tip Disk #1	20.00
<input type="checkbox"/> DiskQuik	29.50	<input type="checkbox"/> Utility City	29.50
<input type="checkbox"/> DOS Boss	24.00		
<input type="checkbox"/> Double-Take	34.95	<input type="checkbox"/> ADD ME to mailing list.	
<input type="checkbox"/> Flex Type	29.50	<input type="checkbox"/> ALREADY ON mail list.	

AT YOUR APPLE DEALER NOW!
Or order directly from Beagle Bros—

Visa/MasterCard or COD, call **TOLL-FREE**
Orders only / ALL 50 STATES / 24 Hours a Day
1-800-227-3800 ext. 1607

OR mail U.S. Check, Money-Order or Visa/MC#
to **BEAGLE BROS.** 7th Floor
4315 SIERRA VISTA, SAN DIEGO, CA 92103

Add \$1.50 First Class Shipping. Any-Size Order.
Overseas add \$4.00. COD add \$3.00. California add 6%.

ALL ORDERS SHIPPED IMMEDIATELY.

Using a Versatile Interface Adapter with Your Apple

By popular demand, our author follows up his recent article on interfacing a stepper motor to an Apple with a description of how to program the 6522 versatile interface adapter.

by Jerry Faughn

In a previous article in *inCider* (October, 1983) I discussed interfacing a stepper motor to an Apple. Many readers responded with letters and telephone calls, often to ask how to program the 6522 versatile interface adapter I had mentioned. This month's article deals with this topic and presents a simple example of how the IC can be used in an interfacing situation.

Obviously, connecting an electronic or mechanical device to a computer implies a way for the computer to communicate with the outside world. A convenient approach to providing this communication is through special chips given names such as PIA, peripheral interface adapter, and VIA, versatile interface adapter, of which the 6522 is an example.

The Apple does not come with either a PIA or a VIA, but cards containing them can be inserted in the slots in the rear of the machine. If you have a firm knowledge of interfacing techniques, you can design and construct your own 6522 card to go in one of these slots. If you are unsure of yourself, I would suggest purchasing a card that is already wired for you. One of the best I know of is supplied by John Bell Engineering Company, 1014 Center St., San Carlos, CA 94070. Each card contains two 6522 VIAs, and the program you write to use the card chooses between them. At \$65 the Bell card is well worth the

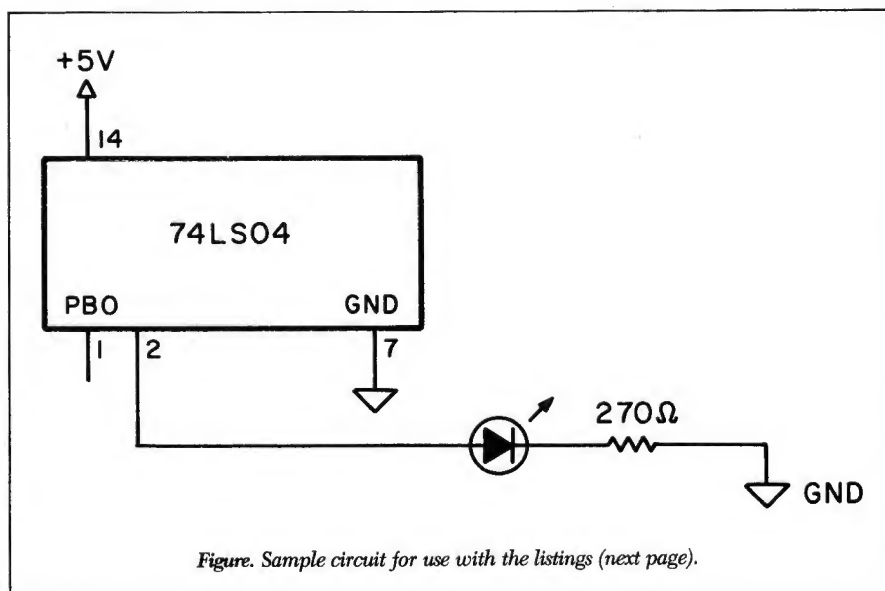


Figure. Sample circuit for use with the listings (next page).

investment if you intend to do much interfacing.

Regardless of the chip used, PIA or VIA, it includes accesses, called input ports, through which information flows to the computer from the outside world, and output ports through which information passes from the computer to the outside world. A 6522 has two such 8-bit parallel ports, which I will refer to as port A and port B. These ports look, to the computer, like memory locations where data can be stored or read. The ports are under complete control of the programmer. That is, both can be input ports, both

can be output ports, either can be an input port while the other is an output port, or individual bits of each port can be independently configured as inputs or outputs.

I will refer to the individual pins of port A as PA7, PA6, . . . PA0, while those of port B will be PB7 through PB0. That is, each port is configured for 8 bits such that if a binary number like 0000 0001 is fed to, say, port A,

You can write Jerry Faughn at the Physics Dept., Eastern Kentucky University, Richmond, KY 40475.



southwestern data systems™

CHANGES ITS NAME TO

Roger Wagner Publishing, Inc.

With my name on the software, you have my personal guarantee of uncompromising quality, ease of use, and reliability in both product and support.

—Roger Wagner, President

THINGS TO DO TODAY!

- Get: 1) Word Processor (easy to use, less than 100.00)
 2) Typing Program (the kids can use it too)
 3) Books to help with writing and word processing

Typing Programs
 Master Type 39.95
 Type Attack 39.95
 Typing Tutor 39.95

PLAN #1
 Homeword 69.95
 Master Type 39.95
 Books 15.00
 124.90

PLAN #2
 Bank Street Writer 69.95
 Type Attack 39.95
 No Books 109.90

PLAN #3
 Homeword 69.95
 Typing Tutor 24.95
 Books 15.00
 109.90

Books?
 Writing 5.00
 WP style 10.00

PLAN #4 The Write Choice

The Correspondent	Included
Tut's Typewriter	Included
Word Processing Style Manual	Included
Elements of Style	Included
The Analyst	Included

Unlocked and copyable

44.95

Everything we need!
 All new from Roger Wagner

The **Personal** Word Processing System designed for the home or classroom.

With all the tools you need, including a full-featured word processor, a HiRes typing tutor, classic guides on writing style and suggested formats for letters, reports, outlines, etc.!

IT'S SIMPLY...

THE WRITE CHOICE!

Apple II, II+, IIe or IIc

See your local Apple Dealer or contact us for details

Current Correspondent Owners please contact us for update information

Apple is a TM of Apple Computer Inc.
 Homeword is a TM of Sierra On-Line Inc.
 Type Attack is a TM of Sirius Software Inc.

Typing Tutor is a TM of Microsoft Corporation.
 Master Type is a TM of Scarborough Systems Inc.
 Bank Street Writer is a TM of Broderbund Software.

Circle 250 on Reader Service card.

Roger Wagner
 PUBLISHING, INC.

10761 Woodside Avenue • Suite E • P.O. Box 582 • Santee, CA 92071 • 619/562-3670

```

10 POKE 49410,1
20 POKE 49408,1
30 FOR J = 1 TO 3000: NEXT J
40 POKE 49408,0
50 FOR J = 1 TO 3000: NEXT J
60 GOTO 20

```

Listing 1. Sample program for configuring a VIA port.

```

10 POKE 49410,1
20 GET SS
30 IF SS = "S" THEN POKE 49408,
  1 GOTO 30
40 GOTO 20

```

Listing 2. Modification of Listing 1 for user control.

pin PA0 goes high (to +5 V) while the other seven pins go low (to GND).

Configuring Ports

The first task in programming ports A and B is to configure them as either inputs or outputs. This is accomplished through memory locations called data direction registers. The addresses of these registers depend on the slot in the computer in which the card is inserted.

As an example, let us assume the John Bell interface card is in slot 1, and also that we plan to use the VIA chip on the card that is nearest the front of the computer. In this case, the address of the data direction register for port A is 49411, and the register for port B is at 49410. Corresponding addresses for other slots in the Apple are given in the literature furnished with the interface card.

If the number 255 is poked into the data direction register for port A (POKE 49411,255), all eight pins of port A are configured as outputs. This occurs because the binary equivalent of 255 is 1111 1111, and feeding a 1 to a bit in the data direction register sets that pin as an output. Similarly, if 0 is stored in the data direction register of port A (POKE 49411,0), then all eight pins become inputs. That is, poking a 0 to a bit in the data direction register sets that particular pin as an input. As another example, poking 49411 with 7 would insert the binary equivalent, 0000 0111, into the data direction register of port A, setting up PA0, PA1, and PA2 as output pins, and the remainder as input pins.

Once the ports have been configured for input or output through the data direction registers, information can be fed to or received from them by means of the following address locations: 49409 for port A and 49408 for port B. (Recall that these memory locations depend on the slot used and whether you are using the front or back VIA.)

As an example, suppose that you have configured port A as an output port. Then, poking the number 1 into memory location 49409 sets PA0 to logic high and the remaining pins to logic low. The +5 V signal at PA0 could be used, perhaps, to close a relay.

A Quiz

Check your understanding of these concepts by referring to Listing 1 to see if you can figure out what the program would do. Don't read ahead until you have tried.

The Answer

Let's see how you did.

Line 10 pokes the data direction register of port B with 1. This sets up pin PB0 as an output, and the remaining pins as inputs.

Line 20 pokes port B with 1, setting pin PB0 high.

Line 30 kills some time.

Line 40 pokes port B with 0, setting pin PB0 low.

Line 50 kills some more time.

Line 60 sends the computer back to line 20 where PB0 is again set high.

The Blinking LED

If a light source such as an LED were suitably connected to pin PB0, this program would make the LED flash on when PB0 is high, then off when PB0 is low. Try the program with the circuit shown in the Figure.

In this schematic the IC 74LS04 is used as a line driver. If you attempt to draw too much current from a 6522 VIA, there is danger of destroying the chip. The purpose of the line driver is to supply the current to the LED while drawing virtually no current from the 6522.

Note that there are actually six line drivers in the 74LS04 chip, but only

one of them is being used. Thus, most of the pins on the 74LS04 are not connected to the VIA. Also note that the +5 V and GND connections for the 74LS04 are available from the 6522. These should be used so that there will be a common ground for the computer and the line driver.

Connect the circuit, run the program in Listing 1, and you should see the LED blink on and off.

Now, take a look at Listing 2. This program sets up pin PB0 as an output pin, then waits in line 20 until you press the S key, which sets PB0 high. Run this program with the circuit you have set up and the LED will remain off until you press S, at which time it will light.

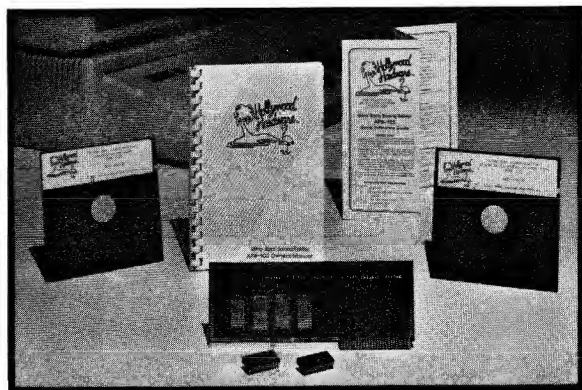
A Burglar Alarm(?)

With a little modification and a lot of care in the interfacing, you have constructed a most *inefficient* burglar alarm. Imagine the LED replaced with a siren. You lie awake all night waiting for the sound of an intruder, then when you hear him you press S on your computer. Pin PB0 turns on a siren and you are saved.

Of course, what is needed is a method of detecting the entrance of the burglar by having him open a switch in a door or window, or by breaking a light beam. This is accomplished by connecting an analog to digital converter to your computer through an input port. The input announces the intrusion and a program idling in the computer memory can then set off the siren automatically.

Connecting an analog to digital converter to your computer through a VIA is a simple undertaking, but not appropriately discussed here. I will add a word of caution, however. I advise against modifying the circuit in the Figure to control a household circuit. At best the 120 V could damage your computer, at worst it could damage you. For such an application a different type of line driver and circuit should be used. The John Bell Company mentioned earlier sells a solid state switch that is excellent for controlling large power loads, but you should not try this until you are completely sure what you are doing. ■

Would You Like to Make
Programming Just Plain **Easier?** Easier to Learn—
Easier To Do— and 3 Times **Faster?!**



The Hollywood Hardware Firmware Enhancement System

Why You Need It:

We take all the enhancements that transform the Apple from a novelty to a powerful instrument, and hook them into the operating system, installed on their own FIRMWARE card. NO disk loading, NO loss of available memory space, NO interface with other programs. The system never need be removed - it is unhooked with two keystrokes, rehooked with four. ALWAYS IN THE MACHINE, NEVER IN THE WAY.

The Response: We Get a Lot of Nice Comments:

"... Excellent product, flawless..." Phil Daley

"...Hollywood Hardware has developed an elegant solution...it makes editing an Applesoft program all it should have been in the first place, and then some..." SOFTALK review

"... The best thing for the Apple since the disk" Edward Decker

The Basic System Includes:

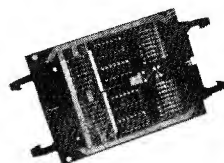
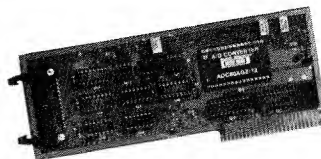
\$189⁰⁰

- The ULTRA-ROM BOARD (APB102A)** Installs 32K of firmware space in any slot of your II, II+, //e. Requires no program memory.
"Nice looking, high quality hardware..." Robert Zedelis
- GPLE 4.2:** Enhanced version of the original editor that **ALLOWS** good programming practice. GLOBAL SEARCH; automatic EDIT or REPLACE; INSERT, DELETE, FIND, ZAP; CASE CONVERT and RESTORE variables, or characters. We guarantee you will never want to be without it.
FUNCTIONS: Sits between the keyboard and the rest of the Apple - so any key can double as a FUNCTION KEY that generates a whole command string. Over 60 of the most used are provided as MACROS. System users never type "CATALOG, D1", or SAVE <filename>". Just type TWO keys: ESC 1, or ESC CTRL-S.
CUSTOMIZE and save your own macros!
"The most powerful program tool I have..." Robert Wilson
"If you program, and haven't used a line editor, get one right away..." Micro Magazine review
- FMS: The FIRMWARE MANAGEMENT SYSTEM** Finds and enables the desired routine with automatic bank switching. New ROMs are recognized automatically.
"... The integrated memory management system is one of the best features of the board." Mark Simonson, Beagle Brothers.
- APU-1:** Over 25 UTILITIES. Invoked by the "&" key: **Ultra fast searches, Garbage program recovery.** Instant numerical conversions, Graphics state controls. Language extensions like PRINT USING and IF, THEN, ELSE are included, and provided in disk form for portability.
"... P.S. love it! Can hardly wait for more!" Paul Fox

Optional Additions Include:

- NEW!! APU-2: superRENUMBER, multiHIDE, multiMERGE, VARIABLE CROSS REFERENCE, AUTONUMBER.** NEW programs by Paul Johnson. Far more powerful and mistake proof than other versions...and you don't destroy your own program loading them in from disk. They are always at hand. **\$35⁰⁰**
- NEW!! COPY ZAP by Glen Bredon - author of BIG MAC. SMART DISK COPIER, and ZAP utilities** written for our system. Also copies 40 track disks! Hit "©" and watch! **\$39⁹⁵**
- NEW!! ROM DEVELOPEMENT SYSTEM:** Program your own firmware! Includes software, documentation and emulation RAM. **\$99⁰⁰**

12 Bit 16 Channel Data Acquisition 12 BIT 16 CH. A/D SIGNAL CONDITIONING



AD16B \$299⁹⁵

A16G \$79⁹⁵

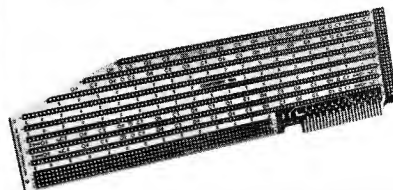
- ★ IRQ or NMI INTERRUPT
- ★ PRECISION SAMPLE & HOLD
- ★ EXTERNAL START CONVERT
- ★ HIGH SPEED - 25,000 CONV/SEC
- ★ 7 VOLTAGE RANGES
- ★ PRECISION REFERENCE OUT
- ★ SUCCESSIVE APPROX. CONVERTOR
- ★ COMPLETE SOFTWARE INCL. DEMOSCOPE

- ★ BOLT-ON FITS IN APPLE
- ★ 16 OP AMPS
- ★ EACH CHANNEL SEPARATE GAIN & FILTERING

A8D from \$149⁹⁵

- ★ 2 to 8 CHANNELS
- ★ TRUE DIFFERENTIAL INPUTS
- ★ BOLT-ON FITS IN APPLE
- ★ GAIN JUMPER EACH CHANNEL
- ★ GAINS OF 1, 10, 100, 1000

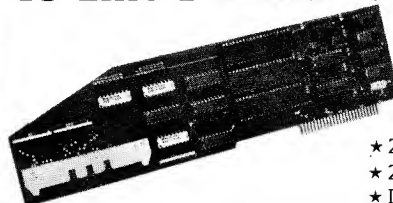
PRO-1 PROTOTYPING BOARD



**THE BIGGEST
THE BEST
\$29⁹⁵**

- ★ ALL IC'S LETTERED BY COLUMN, NUMBERED BY ROW
- ★ ACCEPTS ALL STANDARD SOCKETS - UP TO 52 (16 PIN)
- ★ NUMBERED INPUT & OUTPUT PINS ACCEPT I.D.S. CONNECTOR
- ★ ±5 AND ±12 SUPPLIES HANDY & WITH SPACE FOR FILTERING
- ★ GOLD PLATED EDGE CONNECTOR, PREMIUM BLACK BOARD

48 Line Parallel I/O PD48



\$249⁹⁵

- ★ 25 FILTERED LINES IN
 - ★ 23 BUFFERED LINES OUT
 - ★ INTERRUPT INPUT
 - ★ 4 TIMERS
- W/50 COND. RIBBON CABLE

ADDITIONAL FINE PRODUCTS:

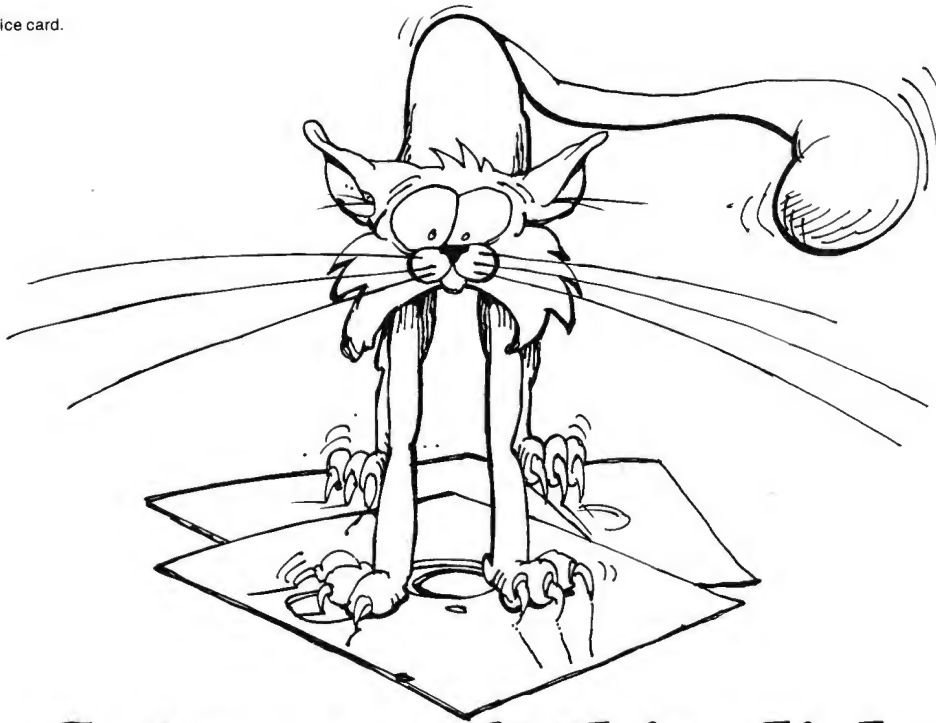
- ★ **MACROTECH MEMORY EXPANSION**
 - DISCULATOR 64K — \$379.95
 - DISCULATOR 128K — 459.95
- ★ **ANCHOR AUTOMATION MODEMS**
 - VM-1 VOLKSMODEM 300 BAUD — \$64.95
 - VM-1 CABLE — 9.95
 - SIGNALMAN MARK II 300 BAUD — 79.95
 - MARK VII, 300 BAUD, AUTO — 109.95
 - MARK XII SMART MODEM — 299.95
 - 300/1200 BAUD AUTO ANSWER
 - BELL 212, RS 232, HAYES* COMPATABLE
- ★ **HOLLYWOOD HARDWARE T-SHIRT**
 - SM, MED, LG, XLG — 12.00

*TRADEMARK HAYES MICROCOMPUTER PRODUCTS



Hollywood Hardware 6842 VALJEAN AVENUE, VAN NUYS, CA 91406 (818) 989-1204

*GPLE © 1983 NEIL KONZEN, SOLD UNDER LICENSE FROM SYNERGISTIC SOFTWARE / APPLE IS A REGISTERED TRADEMARK OF APPLE COMPUTERS INC.



Cat on a soft thin disk.

You need software insurance.

Diskettes are fragile, and when a protected program is damaged, the results are expensive and inconvenient. If you have a backup diskette, though, you can have your Apple, IBM or compatible computer back on line within seconds...affordably. That's software insurance.

Copy II Plus (Apple][,][Plus, //e)

This is the most widely used backup program for the Apple. Rated as "one of the best software buys of the year" by *InCider* magazine, its simple menu puts nearly every disk command at your fingertips. The manual, with more than 70 pages, describes protection schemes, and our *Backup Book™* lists simple instructions for backing up over 300 popular programs. A new version is now available that is easier to use and more powerful than before. Best of all, Copy II Plus is still only \$39.95.

WildCard 2 (Apple][,][Plus, //e)

Designed by us and produced by Eastside Software, WildCard 2 is the easiest-to-use, most reliable card available. Making backups of your total load software can be as easy as pressing the button, inserting a blank disk and hitting the return key twice. WildCard 2 copies 48K, 64K and 128K software, and, unlike other cards, is always ready to go. No preloading software into the card or special, preformatted diskettes are required. Your backups can be run with or without the card in place and can be transferred to hard disks. \$139.95 complete.

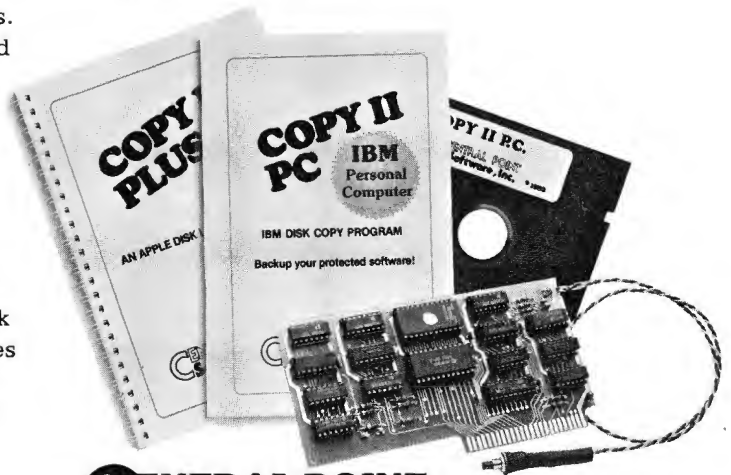
Important Notice: These products are provided for the purpose of enabling you to make archival copies only. Under the Copyright Law, you, as the owner of a computer program, are entitled to make a new copy for archival purposes only, and these products will enable you to do so.

These products are supplied for no other purpose and you are not permitted to utilize them for any use, other than that specified.

Copy II PC (IBM)

This is **THE** disk backup program for the IBM PC and PC/XT that backs up almost anything. Others may make similar claims, but in reality, nothing out performs Copy II PC...at any price. Copy II PC even includes a disk speed check and is another "best buy" at only \$39.95.

We are the backup professionals. Instead of diluting our efforts in creating a wide variety of programs, we specialize in offering the very best in backup products. So, protect your software investment, and get surefire relief from scratchy disks.



CENTRAL POINT Software, Inc.

The Backup Professionals

To order, call 503/244-5782, 8:00-5:30 Mon.-Fri., or send your order to: Central Point Software, 9700 SW Capitol Hwy, Suite 100, Portland, OR 97219. **Prepayment is required.** Please include \$2 for shipping and handling (\$8 outside U.S. or Canada).

Printing Multiple Files with DIABLOPRT

Remember all that money you saved last month
by typing in our Pascal word processor?
This month you can put the finishing touches on it.

—by James R. Florini—

Last month *inCider* published my program that formats Pascal text files to use the Apple Pascal System as the basis for a sophisticated word processor. It prints boldface, superscripts,

subscripts, underlines, takes care of footnotes, includes a second file (such as a table) within the main file, saves empty space for charts or figures, and offers a number of options for format

changes during printing. Used in conjunction with my reference series ("Blaising Bibliographies I, II, and III" published in the March, May, and June 1983 issues of *inCider*), the system also provides nearly automatic bibliography formation.

Two things were left out of the Diablo program published last month. That program (which was *quite* long enough as it was!) rather peremptorily proclaimed that there *would be* one-inch margins, single spacing, page numbering, and so on, giving the user no choice in these matters. It was limited to printing only one file at a time. Obviously that is not enough for serious word processing. Here is a rather substantial addition to that program—an "include file" that takes care of several aspects of entering and checking a list of file names and that offers a range of formatting choices. Although I left it out last month primarily to limit the length of the article and program, the file entry part probably should be entered separately because it (or slightly modified adaptations of it) could be useful for any kind of operation in which a series of text-files is to be processed. Indeed, you might want to go back and incorporate the features found here to specify the files to be analyzed by REFCITED if you are using that program.

When I first wrote it, the CHOOSE_FILES procedure consisted of a simple request for a file name; that's what was done in the version published last

Program listing. Additions to enhance DIABLOPRT.

```

***** BEGINNING OF DIABLO2 INCLUDE-FILE *****

(The first large part is concerned with getting and listing the names of
the files that will be printed.)

PROCEDURE SHOW_HEADING;
BEGIN
  WRITE (CHR(12)); WRITELN ('THESE FILES ARE TO BE PRINTED:');
  WRITE_LINE; WRITELN
  ('      #           File Name           Start New Page?   First Page #');
  WRITE_LINE;
END;

PROCEDURE SHOW_ONE(I:INTEGER);
BEGIN
  GOTOXY (0,I+3); WRITE (I:13, ' ':5,FILENAME[I], ' ':29-LENGTH(FILENAME[I]));
  IF (FIRSTPAGE[I]<>-1) OR (I=1) THEN
  BEGIN
    WRITE ('Yes'); IF FIRSTPAGE[I] > 0
    THEN WRITE (FIRSTPAGE[I]:15) ELSE IF I>1 THEN WRITE ('Continuing':23);
    END ELSE WRITE ('No'); WRITELN;
  END;

PROCEDURE SHOW_LIST;
VAR I: INTEGER;
BEGIN
  SHOW_HEADING; FOR I:=1 TO TOTFILES DO SHOW_ONE(I);
END;

PROCEDURE CHOOSE_FILES;
CONST PROMPTLINE='!-----!';
VAR FINISHED: BOOLEAN;
    ENTRY: STRING;

PROCEDURE ADD_TEXT;
BEGIN
  IF (POS ('.TEXT',ENTRY)=0) AND (POS('.text',ENTRY)=0) THEN
    ENTRY:=CONCAT(ENTRY, '.text');
  END;

PROCEDURE ENTER_FILE (F: INTEGER);

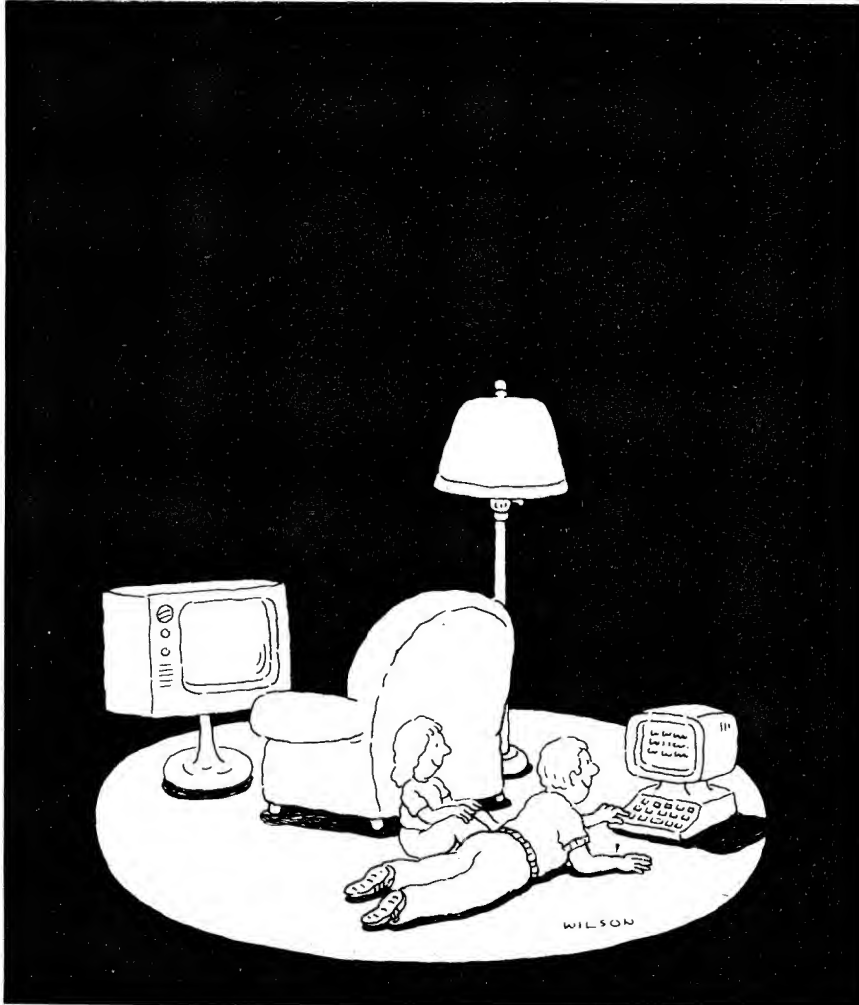
PROCEDURE PAGE_NUMBER;
BEGIN
  FIRSTPAGE[F]:=0; WRITE
  ('What will be the number of the next page? ("0" to continue in sequence) ');
  READLN (ENTRY);
  IF ENTRY<>NULL THEN FIRSTPAGE[F]:=ROUND(VALUE(ENTRY))
  ELSE FIRSTPAGE[F]:=0; GOTOXY(0,20);
  END;

BEGIN (ENTER-FILE)
  GOTOXY(10,23); WRITE('Press <RETURN> with no entry when done. ');
  GOTOXY(0,20); WRITELN ('What file will be number ',F,'?');

```

Listing continued.

Jim Florini receives mail c/o the Biology Department, Syracuse University, Syracuse, NY 13210.



Complacency or curiosity?

Move your children away from the passive nature of TV and turn them on to the excitement and fun of interactive learning with Dow Jones News/Retrieval®.

You probably thought Dow Jones News/Retrieval only provided business and financial information. *Wrong.* We've got something of value for the whole family.

With our 20-volume, 30,000 article Academic American Encyclopedia, Dow Jones News/Retrieval will pique your children's curiosity about the world and help them develop new skills. The information they need for school is easy to access, always up-to-date, always ready. And kids love to use it!

There are timely news reports

from Washington, our nation and the world. You also get current schedules and rates from the Official Airline Guide™; Comp-U-Store, a convenient shop-at-home service; Cineman Movie Reviews; sports highlights, weather reports and MCI Mail—the new electronic mail service that lets you send letters to anyone, *anywhere*, even if he or she doesn't own a terminal.

Overall, you'll find a wide variety of high-quality data bases accessible quickly and easily with most personal computers.

To get your children involved, excited and turned on to the fun of learning, turn them on to Dow Jones News/Retrieval.



Copyright © 1984 Dow Jones & Company, Inc. All Rights Reserved.
Dow Jones News/Retrieval® is a registered trademark of Dow Jones & Company, Inc.

FOR FULL DETAILS, CALL 800-345-8500, EXT. 5

Alaska, Hawaii and foreign, call 1-215-789-7008, Ext. 5

Listing continued.

```
IF FIRSTPAGE[F]<>-1 THEN WRITE
(' (Starting a new page)
ELSE WRITE (' (Enter "page" to
have this file start a new page.));
GOTOXY(34,20); WRITE (PROMPTLINE);
GOTOXY(35,20); READLN(ENTRY);
FINISHED:=ENTRY=NULL; IF NOT
FINISHED THEN
BEGIN
IF (ENTRY='PAGE') OR (ENTRY='page')
THEN
BEGIN
PAGE_NUMBER; ENTER_FILE(F);
END;
END;
END; (ENTER-FILE)

PROCEDURE CHECK_FILE(I: INTEGER);
VAR CH: CHAR;
J: INTEGER;
TESTFILE: TEXT;
SEEKFILE: STRING[20];

PROCEDURE READ_DIR (VOLUME: INTEGER);
(This procedure was condensed from
Call-A.P.P.L.E. in Depth, Vol 2)
TYPE POINTER = ^DIRECTORY;
VOLIDENT = STRING[7];
FILENAME = STRING[15];
DATERECORD = PACKED RECORD
MON:1..12;
DAY:1..31;
YEAR:0..99;
END;
```

Listing continued.

month. A more useful version repeatedly requests file names until a null string (nothing but a carriage return) is entered; this forms an array of file names, and is all that is necessary to print a huge amount of material (depending on the capacity of your disk drives) without further attention. Over the years, bitter experience has taught me that several other features are quite desirable, and still others are rather nice to have. The procedures presented here are a group of conveniences I added over the last three years.

I wrote STANDARD_FORM with the goal of giving the user (me, that is) the widest possible range of choices while answering the smallest possible number of questions. This is done by first presenting a menu of "standard" formatting combinations. If one of them is suitable, only one choice need be made. If not, a bunch of individual choices can be made. Of course, nearly all of these can be specified with command lines in the textfiles, but I find it useful to have alternative ways of doing these things.

How It Works

For CHOOSE_FILES, only two big procedures are called; one enters the files, and the other checks that they are really the ones that are wanted. The first, GET_FILES, prints some simple instructions and then begins building a list of the files to be printed. As each file name is entered, the program checks to see if it is a request to

start a new page (.Page or PAGE); if so, the number to be given that new page is asked, and a file name again requested. Note that a new page can also be specified while entering the file names, or by including .Page accompanied by .Next Number n to specify the page number at the beginning of the text file; I've tried to make this system as versatile as possible by providing these kinds of alternatives.

When the file name is entered, the program adds .TEXT if it is not present, and then CHECK_FILE looks in every possible drive to find a file with that name; Pascal purists might not like this kind of thing, but I am more concerned with user convenience than program purity. If the file is not found (and an exit from CHECK_FILE executed from TRY_IT), the program gives the user a chance to look at the files actually on any disk in the system. As you might guess, I wrote this part for my own benefit; it seems that I am always forgetting the names I assigned to files I want to print. The READ_DIR procedure is a much-condensed version of a Call-A.P.P.L.E. program; it has the advantage of letting you see the entire directory (in two columns, if necessary) while entering the file name. When a correct file name is entered, then the complete file list reappears (SHOW_LIST), and more entries can be made using the prompts at the bottom of the screen.

When all the file names are entered, CORRECT_ENTRIES gives you a chance to correct any erroneous entries. In addition, a file may be added to the list or removed from it if you choose. As this is done using the same ENTER_FILE procedure employed in initial entry of the file names, all the same features are available at this stage too.

When you agree that the list of file names is correct, you are given a menu of four frequently used printing combinations (you can change these to fit your own preferences, of course). If you don't want any of them, N will let you make a series of individual choices. Programming this STANDARD_FORM procedure first taught me about the memory-gobbling properties of strings. There is an Apple Pascal



TOP QUALITY
APPLE COMPATIBLE

DISK DRIVES

Standard Height Apple Compatible.....	\$175
High Quality Half Height Apple Compatible.....	\$185
AP-100-A 2-in-1	\$469
AP-100-B Full Height.....	\$239
AP-100-C Slim Line.....	\$239
Atlas 8 Direct Drive.....	\$199

HARDWARE FOR APPLE

	LIST PRICE	OUR PRICE
Controller Card (dual)	\$ 79	\$ 45
16K Ram Card	79	42
Z-80 Card	185	69
80 Column Card	229	85
Cooling Fan w/Surge Protection and Dual Outlets	69	39
Joystick	49	29
Computer Case Similar to II+	149	59
Replacement Keyboard	149	69
Case w/Numerical Keys	329	169
Switching Power Supply	110	64
RS 232 Card	159	69
Parallel Printer Card w/Cable	149	55
Power Strip w/Surge Protection 6 Outlets	59	23

ADVANCED LOGIC SYSTEMS

Dispatcher	139	129
CPM Card	399	309
Z Card II	169	139
Smartterm II	179	149

CALIFORNIA COMPUTER SYSTEMS

Clock/Calendar	120	95
----------------	-----	----

CORVUS

6 Meg. Disk System	2,195	1,689
11 Meg. Disk System	2,995	2,289
20 Meg. Disk System	3,995	2,995

DAN PAYMAR/ENHANCEWARE

LCA-1	37.50	35
LCA-2	27.50	24

EASTSIDE SOFTWARE

Wildcard	109.95	89
Wildcard II	139.95	105

ELECTRONIC PROTECTION DEVICES

The Lime	89.50	72
The Orange	139.95	105

ENTER COMPUTER

Sweet-P Plotter	695	479
-----------------	-----	-----

INNOVATIVE CONCEPTS

Flip 'n File	29.95	23
Flip 'n File 50	39.95	29

KENSINGTON MICROWARE

System Saver Fan	89.95	69
------------------	-------	----

KOALA TECHNOLOGIES

Koala Pad w/Micro Illustrator	124.95	79
-------------------------------	--------	----

KRAFT

Joystick	64.95	49
Paddles	49.95	39

MICROSOFT

Softcard	345	239
Softcard Premium System	695	485
Premium Softcard IIe	495	369
Softcard Plus System	645	449

MICROTEK

Dumpling-GX	159	109
64K Ram Card	379	152
128K Ram Card	479	219

MOUNTAIN COMPUTER INC.

Music System w/Software	395	299
The Clock	280	219

ORANGE MICRO

Grappler+	175	119
Buffered Grappler+	239	169
Bufferboard	175	139

PERSONAL COMPUTER PRODUCTS

Appli-Card 4MHz/64K Memory	295	225
Appli-Card 6MHz/64K Memory	375	285

PRATICAL PERIPHERALS

16K Micro Buffer II	199	149
32K Micro Buffer II	219	165

SWEET MICRO SYSTEMS

Mockingboard	124.95	92
--------------	--------	----

SYNETIX SYSTEMS

Supersprite w/3 Diskettes	454.95	319
---------------------------	--------	-----

TITAN SYSTEMS

32K Ram Card	219	165
64K Ram Card	349	259
64K Ram+80 Col Accelerator II	249	189
	599	459

VIDEOX

Ultraterm	379	269
Videoterm	279	195
80 Col+Soft Switch	309	239
Enhancer II	149	115
Function Strip	79	65
Visicalc Preboot	49	39

PRINTERS

Call for prices on Diablo, IDS and NEC

BROTHER

HR-15P	599	459
HR-25P	995	749

MANNESMAN TALLY

Spirit 80	399	299
MT-160L	798	609
MT-180L	1,098	845

OKIDATA

Microline 82A	\$ 549	\$ 349
Microline 92P	699	479

STAR MICRONICS

Gemini 10X	399	279
Gemini 15X	549	419
10X 4K Serial	119	95
10X 4K Buffer	99	89

TOSHIBA

P1350 w/Parallel Interface	2,195	1,599
----------------------------	-------	-------

TRANSTAR

T315 Color Printer	599	485
PICS Apple Interface	119.95	95
120P	599	489

MONITORS

AMDEK

V300 12" Green	179	142
V300A 12" Amber	199	152
Color I+	399	305
Color II+	559	435

NEC

JB 1260 12" Green	149.95	115
JB 1205M (A) 12"	210	169

SANYO

12" Hi Res Green	145	109
9" Hi Res Green	175	139
13" Med Res Color	795	649

TAXAN

12" Amber	190	135
12" Green	180	125
RGB Vision I	399	315
RGB Vision III	699	499

MODEMS

HAYES

Smartmodem 1200	699	489
Micromodem IIe (New)	329	249
Smartcom I (Apple)	119	89
Chronograph	249	199

NOVATION

CAT Acoustic 300	189	149
J-CAT	149	109
103 Smart CAT	249	169
103/212 Smart CAT	595	396
212 Auto CAT	695	549
Apple CAT II	389	249
212 Apple CAT Upgrade Kit	389	315

SOFTWARE

Please call for current listing

FREE
SHIPPING

To order or for FREE catalog, phone

312-355-9726

If you don't see what you need, call us...we probably have it.

We accept check, money order, VISA or Mastercard (include # and expiration date). Please add 2% for credit card purchase. Illinois residents add 6.25% sales tax. Personal and company checks allow 2 weeks to clear. Prices subject to change without notice. Free shipping applies only to Continental U.S.



MICRO CITY

P.O. Box 571 • Downers Grove, IL 60515



Forbidden Fruit...

Think about it . . .

"No program is perfect for everyone."

All of them will soon need improvements,
updates, additions and other modifications.

But Copy-Protection of a disk
prevents you from making changes!

Copy-Protection is:

anti-back-up (it does not let you back up the disk.)

anti-listing (it prevents you from viewing the listings.)

anti-customizing (you cannot alter it to fit your needs.)

in other words . . . it is: **ANTI-USER!**

HARDCORE

Computist:

- opposes copy-protection as it is now used.
- will reveal how it is done and un-done.
- shows users how to back up such disks.

Subscribe NOW to a users magazine.

- | | | |
|---|---|--|
| <input type="checkbox"/> Send me one year (12 issues) of HARDCORE Computist . IC2 | | |
| <input type="checkbox"/> U.S. \$25 | <input type="checkbox"/> APO/FPO (1st Class) . . \$34 | <input type="checkbox"/> Foreign Surface Mail . . \$40 |
| <input type="checkbox"/> Canada . . \$34 | <input type="checkbox"/> Mexico \$39 | <input type="checkbox"/> Foreign Air Mail \$60 |

Name

Address

City State Zip

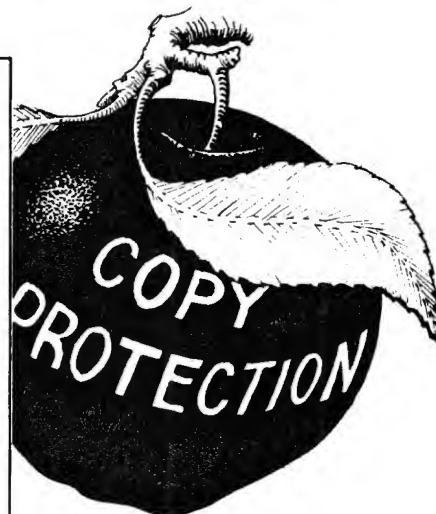
Country Phone

VISA/MC # Exp Date

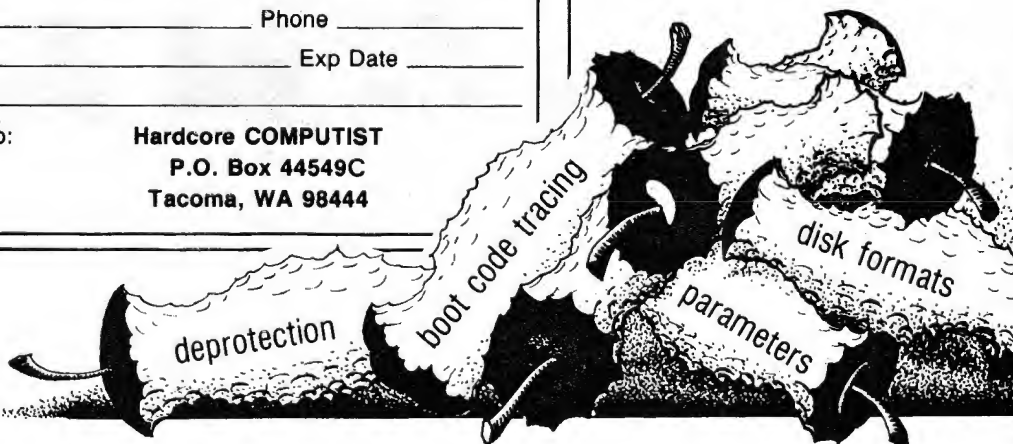
Signature

Make checks payable to:
U.S. Funds Only

Hardcore COMPUTIST
P.O. Box 44549C
Tacoma, WA 98444



**NOT
ANY
MORE!**



Listing continued.

```

FILEKIND = (VOL, BADFILE, CODE, TEXT, INFO, DATA, GRAF, FT, SECURE);
DIRENTRY = RECORD
    FIRSTBLOCK: INTEGER;
    LASTBLOCK: INTEGER;
    CASE DIRFILEKIND: FILEKIND OF
        VOL, SECURE: (DISKNAME: VOLIDENT;
                      ENDOFBLK: INTEGER;
                      FILENUM: INTEGER;
                      DUMMY: INTEGER;
                      LASTBOOT: DATARECORD);
        BADFILE, CODE, TEXT, INFO, DATA, GRAF, FT:
            (DIRFILENAME: FILENAME;
             LASTBYTE: INTEGER;
             ACCESS: DATARECORD);
    END;
DIRECTORY = ARRAY[0..77] OF DIRENTRY;

VAR NUM: CHAR;
DIRPOINTER: POINTER;
I, FILES: INTEGER;
MONTH, MONTHLIST, VOLNAME: STRING;

PROCEDURE SHOW_ONE(M: INTEGER);
BEGIN
    WITH DIRPOINTER^[(M)], ACCESS DO
        BEGIN
            MONTH:=COPY(MONTHLIST,3*MON-2,3);
            WHILE LENGTH(DIRFILENAME)<15 DO DIRFILENAME:=CONCAT(DIRFILENAME,' ');
            WRITE(M:2,' ',DIRFILENAME,LASTBLOCK-FIRSTBLOCK:4,
                DAY:5,'-',MONTH,'-',YEAR);
        END;
END;

PROCEDURE SHOW_DIRECTORY(N: INTEGER);
BEGIN
    SHOW_ONE(N); WRITE(' ');
    IF FILES >= N+15 THEN SHOW_ONE(N+15); WRITELN;
END;

BEGIN {MAIN READ-DIR}
    (**I-*) UNITCLEAR(VOLUME); IF IORESULT<>0 THEN
        BEGIN
            WRITELN('VOLUME #',VOLUME,' IS NOT ATTACHED!'); EXIT (READ_DIR);
        END;
    MONTHLIST:='JanFebMarAprMayJunJulAugSepOctNovDec';
    CLEAR_SCREEN; WRITELN('READING DIRECTORY FOR VOLUME #',VOLUME,' ');
    NEW (DIRPOINTER);
    UNITREAD (VOLUME,DIRPOINTER^,SIZEOF(DIRECTORY),2);
    VOLNAME:=DIRPOINTER^[0].DISKNAME;
    WRITELN(VOLNAME:10,' ');
    FILES:=DIRPOINTER^[0].FILENUM;
    IF FILES<16 THEN FOR I:= 1 TO FILES DO SHOW_DIRECTORY(I) ELSE
        FOR I:=1 TO 15 DO SHOW_DIRECTORY(I);
    END; {READ-DIR}

PROCEDURE GET_DIRECTORY;
VAR VOL: INTEGER;
BEGIN
    CASE CH OF
        '1': VOL:=4;
        '2': VOL:=5;
        '3': VOL:=11;
        '4': VOL:=12;
        '5': VOL:=9;
        '6','0': VOL:=10; {I use "0" for my 128 K RAM card}
    END;
    READ_DIR(VOL); WRITELN('Now enter the CORRECT file name. ');
    GET_ENTRY(12,ENTRY);
END;

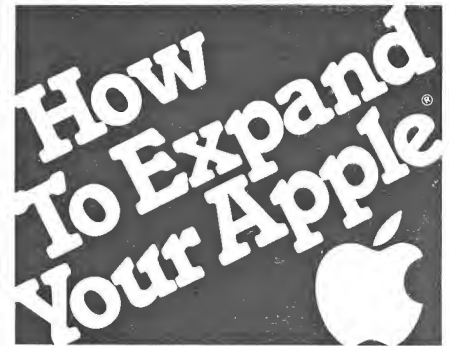
PROCEDURE TRY_IT (VOLNUM: STRING);
BEGIN
    (**I-*) SEEKFILE:=CONCAT(VOLNUM,ENTRY); RESET (TESTFILE,SEEKFILE); (**I+*)
    IF IORESULT=0 THEN
        BEGIN
            FILENAME[1]:=SEEKFILE; EXIT (CHECK_FILE);
        END;
    END; {TRY-IT}

BEGIN {MAIN CHECK-FILE} {I think this is the ultimate in "user-friendly"}
    {Remove vol prefix if the desired file not on the specified volume}
    TRY_IT(''); IF POS(':',ENTRY)<>0 THEN DELETE(ENTRY,1,POS(':',ENTRY));
    {Look in all other possible disk drives}
    TRY_IT('#5:'); TRY_IT('#4:'); TRY_IT('#11:'); TRY_IT('#12:');
    TRY_IT('#9:'); TRY_IT('#10:');
    {If not found, complain and offer a chance to correct the name}
    CLEAR_SCREEN; GOTOXY(10,10);
    WRITELN(CHR(7),'No file entitled ',ENTRY,' was found. ');
    WRITELN
        ('Enter a corrected name for the file, or the number (0 to 6)');
    WRITE('of the drive that might contain it. ');
    GET_ENTRY(12,ENTRY); IF ENTRY<>NULL THEN
        BEGIN
            CH:=ENTRY[1]; IF CH IN ['0'..'6'] THEN GET_DIRECTORY;
            ADD_TEXT; CHECK_FILE(I); SHOW_LIST;
        END ELSE FINISHED:=TRUE;
    END; {CHECK-FILE}

PROCEDURE GET_FILES;
VAR PRESS: CHAR;
BEGIN
    TOTFILES:=0; WRITELN;
    WRITELN
        ('Now enter the names of the files containing the text to be printed');
    writeln
        ('by this program. You need not specify the volume name for the files. ');
    writeln ('The "TEXT" suffix will be added, if you omit it. '); WRITELN;

```

Listing continued.



Only Titan's Neptune™ provides Apple IIe users with an 80-column video display and up to 192K memory—all in just one slot.

Now, Titan's exclusive Neptune extended 80-column card gives you increased video display and up to 192K memory using just one slot in your Apple IIe. Designed expressly for the auxiliary slot of the IIe, the Neptune is available with 64K, 128K or 192K of RAM memory. The RAM memory can be



utilized as a solid state RAM disk. Additionally, Titan's VC-EXPAND/80™ software supplied with each Neptune expands VisiCalc® up to 220K of workspace memory and provides many other VisiCalc enhancements. DOS, PASCAL and CP/M® PSEUDO-DISK™ patches and a DOS relocation program are also included with each Neptune card.

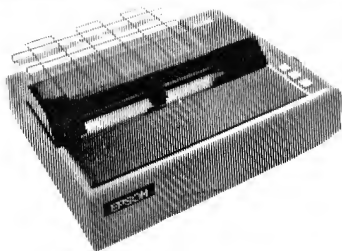
Let us help you expand your Apple's productivity. For information on the Neptune and other Titan microcomputer products, see your computer dealer or contact: Titan Technologies, Inc., P.O. Box 8050, Ann Arbor, MI 48107; Telephone (313) 973-8422.

Sales and Marketing by The MARKETING RESOURCE GROUP, Costa Mesa, CA.



Apple is a registered trademark of Apple Computer, Inc. VisiCalc is a registered trademark of VisiCorp, Inc. CP/M is a registered trademark of Digital Research, Inc. VC-EXPAND software is written by Micro Solutions, Inc. Neptune and PSEUDO-DISK are trademarks of Titan Technologies, Inc.

SAVE AT ELEK-TEK ON PRINTERS



EPSON RX-80

100 CPS DOT MATRIX
Tractor Feed Only

275.00

RX 80 FT

Includes fric. & trac. capability

CALL

RX 100

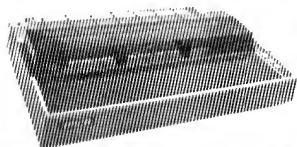
132 Col. version of RX 80 FT

CALL

EPSON FX-80

160 CPS DOT MATRIX

\$455.00



FX 100

132 Col. version of FX 80

CALL

Cables for Epson

PA10A 10 ft. 36/36 pin	
standard parallel	32.00
IB-P10 10 ft. 36/25 pin parallel	
for IBM	32.00
PA6T 6 ft. 36/16 pin parallel	
for TI-99/4A	25.00
RS10A 10 ft. 25 pin	
standard RS-232C (full loaded)	25.00
RS1Y RS-232 Y cable for TI-99/4A	25.00

Interfaces

CARDCO G	65.00
APPLE DUMPLING GX	65.00
GRAPPLER PLUS	105.00
Buffered (16K) GRAPPLER PLUS	165.00
8148 Ser. (For RX or FX Models)	90.00
8161 IEEE-488 Interface	60.00

Ribbon Cartridges

EP 192 For EPSON 80 col. printers	4.00
EP 193 For EPSON 132 col. printers	7.00

**DUST COVERS
AVAILABLE FOR
ALL MODELS — \$5.00**

**LETTER QUALITY PRINTERS
\$500—\$1,550
TTX — COMREX — DIABLO**

**CALL TOLL FREE 800-621-1269
EXCEPT Illinois, Alaska, Hawaii**

Corp. Accts. invited. Min Ord. \$15.00 Mastercard or Visa by mail or phone. Mail Cashier's Check, Money Ord., Pers. Check (2 wks to cln) Add \$4.00 1st item. (AK, HI, P.R., Canada add \$10.00 first item) \$1.00 ea. add'l shpg. & handl. Shipments to IL address add 7% tax. Prices subj. to change. **WRITE for free catalog.** Return policy for defective on arrival replacements only: 90 day mfr. wty. **ALL ELEK-TEK MERCHANDISE IS BRAND NEW, FIRST QUALITY AND COMPLETE.**



ELEK-TEK, inc.

6557 N. Lincoln Ave., Chicago IL 60645
(800) 621-1269 (312) 677-7660

Listing continued.

```

WRITE('Press any key to continue. '); READ(KEYBOARD,PRESS);
SHOW_HEADING;
REPEAT
  CLEAR_BOTTOM; TOTFILES:=TOTFILES+1; IF TOTFILES=MAXFILES THEN
  BEGIN
    Writeln ('This is the LAST file that can be written in this set. ');
    Writeln ('Press <SPACE> to continue. '); READ (PRESS); CLEAR_BOTTOM;
  END;
  ENTER_FILE(TOTFILES); IF NOT FINISHED THEN
  BEGIN
    ADD_TEXT; CHECK_FILE(TOTFILES); SHOW_ONE(TOTFILES);
  END;
  UNTIL FINISHED OR (TOTFILES=MAXFILES);
  GOTOXY (0,TOTFILES+3); WRITE_LINE; IF FINISHED THEN TOTFILES:=TOTFILES-1;
END; (GET_FILES)

PROCEDURE CORRECT_ENTRIES;
VAR CHOICE: CHAR;
    I: INTEGER;

PROCEDURE REMOVE_ONE;
VAR I, R: INTEGER;
    S: STRING;
BEGIN
  CLEAR_BOTTOM;
  WRITE ('Number of file to be removed? '); READLN (S);
  REPEAT
    R:=ROUND(VALUE(S)); IF (R<1) OR (R>TOTFILES) THEN
    BEGIN
      WRITE(R,' is outside the numerical range; enter corrected one: ');
      READLN(S);
    END;
  UNTIL (R>0) AND (R<=TOTFILES);
  CLEAR_BOTTOM; WRITE ('SURE you want to remove #'R,' - ',
    FILENAME[R], ' ? ');
  CHOICE:=GET_CHAR(NULL,NULL,['Y','N']);
  IF CHOICE='Y' THEN
  BEGIN
    TOTFILES:=TOTFILES-1;
    FOR I:=R TO TOTFILES DO
    BEGIN
      FILENAME[I]:=FILENAME[I+1]; FIRSTPAGE[I]:=FIRSTPAGE[I+1];
    END;
  END;
  SHOW_LIST;
END; (REMOVE-ONE)

BEGIN (MAIN CORRECT-ENTRIES)
  REPEAT (Don't quit until ALL are correct)
  REPEAT (Extra lines in GET_CHAR mess up listing, so don't use it here)
  CLEAR_BOTTOM;
  WRITE ('Are all of these correct? '); READ (CHOICE); Writeln;
  IF NOT (CHOICE IN ['Y','N','y','n']) THEN
    Writeln (CHR(7),'ONLY "Y" OR "N" ANSWERS HERE, PLEASE! ');
  UNTIL CHOICE IN ['Y','N','y','n'];
  IF CHOICE IN ['n','N'] THEN
  BEGIN
    WRITE ('Which one is wrong? ("R" to remove one.) '); READLN(ENTRY);
    CLEAR_BOTTOM; IF LENGTH(ENTRY)=1 THEN
    BEGIN
      CHOICE:=ENTRY[1]; IF CHOICE IN ['R','r'] THEN
      BEGIN
        REMOVE_ONE; CORRECT_ENTRIES; EXIT(CORRECT_ENTRIES);
      END;
    END;
    I:=ROUND(VALUE(ENTRY));
    IF I>TOTFILES THEN
    REPEAT
      IF I=TOTFILES+1 THEN
      BEGIN (Allow addition of one file to list)
        GOTOXY(0,TOTFILES+4); WRITE (CHR(29));
        TOTFILES:=TOTFILES+1
      END ELSE
      BEGIN
        CLEAR_BOTTOM; WRITE (CHR(7));
        Writeln (I,' is larger than the number of files listed. ');
        WRITE ('Enter a corrected value: '); READLN (ENTRY);
        I:=ROUND(VALUE(ENTRY)); CLEAR_BOTTOM; FIRSTPAGE[I]:=-1;
      END;
    UNTIL (I>0) AND (I<=TOTFILES);
    ENTER_FILE(I); IF NOT FINISHED THEN
    BEGIN
      ADD_TEXT; CHECK_FILE(I);
      GOTOXY (0,I+3); WRITE (CHR(29)); SHOW_ONE(I);
    END;
  END;
  UNTIL CHOICE IN ['y','Y']; GOTOXY (0,TOTFILES+4); WRITE_LINE;
END; (CORRECT-ENTRIES)

BEGIN (MAIN CHOOSE-FILES)
  CLEAR_SCREEN; GET_FILES; CORRECT_ENTRIES;
END;

(*****
The second big part of this include-file takes care of making a series
of choices concerning printout format, so they don't have to be specified
in each textfile)

PROCEDURE SET_FORMAT;
VAR S: STRING;

PROCEDURE PAGE_CHOICES;
BEGIN
  PRINTNUM:=TRUE; CHOICE:=GET_CHAR
  ('Print "Page" in front of the page number? ',NULL,['Y','N']);
  IF CHOICE='Y' THEN PRINTPAGE:='Page' ELSE PRINTPAGE:=SPACE;

```

Listing continued.

THE SENSIBLE SPELLER™ IV CORRECTS SPELLING MISTAKES IMMEDIATELY.

The most popular new word-processing product introduced for the Apple computer in 1982 was not a word processor—it was the SENSIBLE SPELLER IV proofreading program.* A perfect complement to your current Apple word-processing program, the SENSIBLE SPELLER IV is fast, friendly, and gives you the features you need in a spelling checker.

First in features**

It only takes a minute or two for the SENSIBLE SPELLER to scan through a ten-page document and compare each word against its 80,000-word dictionary. Each misspelled word is shown to you in the middle of a small excerpt from your document, so you won't waste time trying to remember how you used the word.

You can immediately correct the misspelled word by replacing it with the proper spelling. The SENSIBLE SPELLER even suggests the correct spelling for your misspelled words!

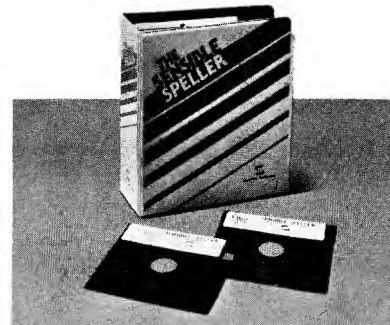
First in dictionaries

The SENSIBLE SPELLER includes the largest, most authoritative dictionary available for the Apple computer. Over 80,000 words are supplied, direct from the official Random House Dictionary. And there is unlimited room to add your own special words. The official Black's Law Dictionary is available separately.

First in word-processor compatibility

The SENSIBLE SPELLER works with more Apple word processors than any other spelling program, including: DOS 3.2, DOS 3.3 (Apple Writer—all versions, Bank Street Writer, Magic Window, Screen Writer, etc.), SuperText, Word Handler, CP/M (Wordstar, etc.), and PFS: WRITE word processors.

The SENSIBLE SPELLER is available for \$125 and runs on all Apple //e, II + , and Apple-compatible computers with one or two disk drives.



**Sensible®
Software, Inc.**

24011 Seneca
Oak Park, MI 48237
(313) 399-8877

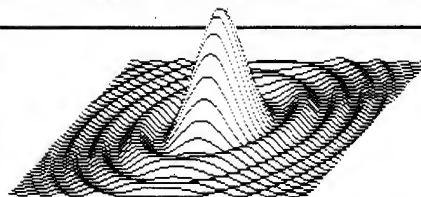
Please add \$1.25 for shipping.
Visa/Mastercard/Check/COD welcome!

*April 1983, Softalk magazine reader survey.
**Not all features are available with CP/M, PFS: WRITE and Word Handler.

PFS: WRITE is a trademark of Software Publishing Inc. Apple, and Apple Writer are trademarks of Apple Computer, Inc.; Bank Street Writer — West Publishing; CP/M — Digital Research Corp.; Screen Writer — Sierra On-Line, Inc.; SuperText — Muse Software; Word Handler — Silicon Valley Systems; WordStar — Micropro International

**Now works with
PFS: WRITE**

IMAGE PRINTER II THE FULL SERVICE PICTURE PRINTER



BEYOND CONVENTIONAL PROGRAMS.

The new, improved IMAGE PRINTER goes beyond the capabilities of conventional picture printing programs for the Apple II. Even owners of graphic printer interface cards will find that IMAGE PRINTER greatly expands their picture printing abilities!

FULL SERVICE MEANS MORE FEATURES.

IMAGE PRINTER starts you out on the fast track by helping you "capture" the HI-RES pictures from your favorite programs—even the copy-protected ones!

IMAGE PRINTER then lets you customize the picture the way you want by adding titles, lines, boxes, color filling portions of the screen, or even scrolling the entire picture in any of four directions.

After you polish your picture, IMAGE PRINTER lets you easily select any portion of it to be printed. The resulting image can be shrunk or expanded and then printed either vertically or horizontally, anywhere on the printed page.

FEATURES	IMAGE PRINTER	GRAPHIC PRINTER CARDS	OTHER PICTURE PROGRAMS
Capture pictures from programs	X	—	—
Save pictures on diskette	X	—	X
Menu driven for ease of use	X	—	X
Unprotected, modifiable	X	—	—
Add titles, borders, lines & boxes	X	—	—
Color fill portions of picture	X	—	—
Scroll pictures 4 ways	X	—	—
View picture before printing	X	—	X
Print any portion of picture	X	—	X
Select a portion of a picture using a graphic "window"	X	—	—
Print 1/2 to 6x normal size	X	—	—
Print horizontally or vertically	X	X	X
Print anywhere on page	X	—	X

Image Printer works with over 30 different printers and 20 different interface cards.

DON'T SETTLE FOR LESS!

GET THE FULL SERVICE PICTURE PRINTER! \$49.95



**Sensible™
Software, Inc.**

24011 Seneca
Oak Park, MI 48237
(313) 399-8877

Visa and Mastercard Welcome Add 1.25 postage and handling per program

Listing continued.

```

CASE GET_CHAR
  ('Print page number at L)eft, M)iddle, or R)ight of page? ',NULL,
  ['L','M','R']) OF
  'L': BEGIN
    PAGEPLACE:=5; HEADPLACE:=LENGTH(RUNHEAD)
  END;
  'M': BEGIN
    HEADPLACE:=36+TRUNC (LENGTH(RUNHEAD)/2); PAGEPLACE:=38;
  END;
  'R': BEGIN HEADPLACE:=75; PAGEPLACE:=73; END;
END; (CASE)
WRITE ('What is the number of the first page? ');
READLN (S); PAGE:=ROUND (VALUE(S));
END;

BEGIN (MAIN SET_FORMAT)
  CLEAR_SCREEN;
  FORMATTING:=GET_CHAR('Format printout? ',NULL,['Y','N'])='Y';
  PLUSMINUS:=GET_CHAR
  ('Print "+" signs as "plus or minus"? ',NULL,['Y','N'])='Y';
  UNDERSPACE:=GET_CHAR('Underline SPACES when underlining? ','',['Y','N'])='Y';
  WRITE ('What margin (in inches) at the top and bottom? ');
  READLN (S); WRITELN; MARGINS:=ROUND(6*VALUE(S));
  CHOICE:=GET_CHAR ('How many spaces between lines? ',NULL,['1'..'9']);
  S:=SPACE;S[1]:=CHOICE;
  LINESPACE:=TRUNC (VALUE(S)); WRITELN;
  PAUSE:=GET_CHAR ('Pause at the end of each page',
  'to allow insertion of single sheets of paper? ',['Y','N'])='Y';
  IF GET_CHAR ('Print page numbers? ',NULL,['Y','N'])='Y'
  THEN PAGE_CHOICES ELSE PRINTNUM:=FALSE;
  END; (SETFORMAT)

PROCEDURE STANDARD_FORM;
BEGIN
  PROCEDURE CHOOSE_FORM;
  BEGIN
    CASE GET_CHAR(' Choose one of the above, or enter "N" if none of them. '
    NULL,['1'..'4','N']) OF
      '1': BEGIN MARGINS:=6;LINESPACE:=2;PAUSE:=TRUE; END;
      '2': BEGIN MARGINS:=6;LINESPACE:=2;PAUSE:=FALSE;END;
      '3': BEGIN MARGINS:=4;LINESPACE:=1;PAUSE:=FALSE;END;
      '4': BEGIN MARGINS:=6;LINESPACE:=1;PAUSE:=FALSE;END;
      'N': SET_FORMAT;
    END; (CASE STATEMENT)
  END; (CHOOSE-FORM)
END;

BEGIN (MAIN STANDARD-FORM)
  CLEAR_SCREEN;

```

Listing continued.

limit of 1200 bytes of object code in one procedure or function, but it is rare to encounter the Syntax Error #253—Procedure too long compiler error message. Even the long list of nested case statements in READ_COMMAND uses only 530 bytes; it has no strings, just a lot of chars and procedure calls. When first written, STANDARD_FORM had more writelns and didn't use the :n output formatting technique to avoid unnecessary spaces. It bombed with an Error #253. Even the shortened version presented here uses 883 bytes. No wonder the old-timers who started on 16K machines use such short prompts in their programs!

If you enter N, CHOOSE_FORM calls SET_FORMAT to set many of the parameters individually. To avoid unnecessary questions, you are asked about various aspects of page numbering only if you indicate that pages are to be numbered. The result of a function (GET_CHAR) can be used directly as the selector in a CASE statement (as in CHOOSE_FORM and PAGE_CHOICES) or as part of a Boolean expression (as in SET_FORMAT). Before I realized this, I wrote all of these things as two-step operations, using the CHOICE variable a lot. The current version is more elegant.

When all of these choices are made, the program returns to the main DIABLOPRT program and prints all the files you have specified, with all the formatting features you want. I should point out that the current value of MAXFILES is established on the basis of the 24-line Apple screen; lines 0-3 are used for the header above the file names, and 20-23 are used for the messages that illustrate numbers of words, lines, and pages printed. This leaves lines 4-19 for the list of files and the line beneath them; I can't recall any time that I have printed more than ten files, but if you should need a larger number, there is really nothing wrong with increasing the value of MAXFILES to whatever you want. The screen display will be messed up, but, after all, this is primarily a *printing* program.

To incorporate this extended utility into your DIABLOPRT program, first type it and save it as DIABLO2 on the

Circle 216 on Reader Service card

DON'T COOK YOUR APPLE®!

Have you added an 80 column, Z80 or RAM card to your *Apple II*?
Have you also connected disk drives and printers?

If so, your *Apple* runs the risk of overheating, spoiling programs and seriously shortening the life of major components. And look at the tangle of wires that you have!



THE FAN™ is a single unit with a very quiet and efficient cooling fan. It has all the necessary connectors and fits neatly on the back of your *Apple*.

THE FAN also filters out surges and spikes in the main supply which can damage your hardware and corrupt data. A single switch ensures that all peripherals are turned off at the same time as the *Apple*.

THE FAN is simple to attach and remove, and matches the *Apple* perfectly.

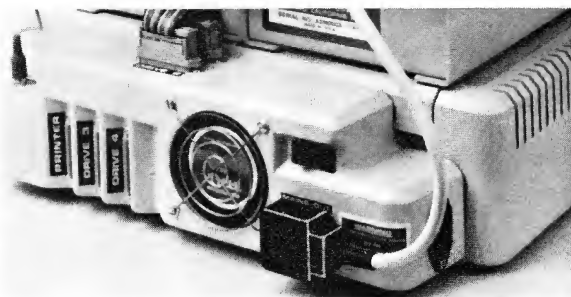
TO ORDER, please send check or money order for \$155.00 to:

Shipping and handling charges are included. Colorado residents, please add \$5.25 to cover 3.5% State sales tax.

KEMCORE COMPANY
Suite 7068
111 East Drake
Fort Collins, CO 80525



'Apple' and 'Apple II' are registered trademarks of Apple Computers, Inc.



disk in your drive 2; have the DIABLOPRT program on that same disk. Now remove the CHOOSE_ENTRIES and STANDARD_FORM procedures from your DIABLOPRT file, and put (*\$I #5:DIABLO2*) in their place. Save the changed file to disk, and then use N from the filer to remove the workfile. Make sure that at least 28 contiguous blocks of free space are available on the disk in drive 2 so you'll have room for the codefile. Then return to the command mode, and enter C to compile. In response to the Compile what text? prompt, enter #5:DIABLOPRT, then enter \$ when asked To what codefile?; this will give the resultant codefile with the same name on the same disk.

These entries are necessary to take advantage of the UCSD system's helpfulness in putting the cursor wherever errors are detected by the compiler. Using an include-file, if you compiled System.Wrk.Text in the usual way, any errors in the DIABLO2 file would lead to the cursor being placed at a completely meaningless spot in the workfile. Compiling as shown above gets a No workfile present prompt when you go to the Editor after a compiler error; just respond with #5:DIABLO2 when asked what file to get. That way, the cursor will go to the location at which the error was detected. Unfortunately, that doesn't necessarily mean the point at which it occurred, but at least you have a better chance to figure out what is wrong. Assuming that you have entered and successfully compiled the DIABLOPRT program last month, any errors that turn up this time must be located in the include-file.

This completes this extensive DIABLOPRT program. Using it for several years has been very satisfactory; it does everything I want it to do. It has certainly made my writing and reviewing chores a lot less onerous, because I find it much faster to type things on the computer than to write them by hand. Unfortunately, I haven't figured out a way to feed raw data into the program and have it automatically write papers and grant applications for me. If you have a program that solves this little problem, please let me know. ■

Listing continued.

```
PLUSMINUS:=TRUE;FORMATTING:=TRUE;PRINTNUM:=TRUE;
UNDERSPACE:=FALSE;
PAGE:=1;PRINTPAGE:='Page';PAGEPLACE:=73;HEADPLACE:=75;
Writeln ('The following combinations are pre-arranged:');Writeln;
WRITE_LINE;
Writeln (' PARAMETER','CHOICE':32);
Writeln (
-----');
Writeln ('#1':23,'#2':12,'#3':12,'#4':12);
Writeln;
Writeln (' Margin (t & b)      1.0 inch    1.0 inch    0.67 inch    1.0 inch');
Writeln (' Spacing              double     double     single      single');
Writeln (' Pause at bottom','yes':8,'no':12,'no':12,'no':12);
WRITE_LINE;
Writeln; IF RUNHEAD <> NULL THEN
IF (RUNHEAD='F') OR (RUNHEAD='f') THEN WRITE ('Name of each file ') ELSE
WRITE ('"',RUNHEAD,'"'); Writeln('printed at right of each page. ');
Writeln (' Pages numbered at the right starting with page 2. ');
Writeln (' All except superscripted "+" printed as "plus or minus"');
CHOOSE_FORM;
END; (STANDARD-FORM)

(***** END OF DIABLO2 INCLUDE-FILE *****)
```

Circle 244 on Reader Service card.



BEAT IT

Turn your Apple II, II+ or IIe into a drum and percussion instrument with **Drum-Key®**, an interface board/software package that lets you create music using digital recordings of actual percussion sounds. It's like having 28 different percussion instruments at your fingertips. You can compose, play, record and playback, even use pre-recorded rhythm patterns of all the percussion sounds. Use these patterns or create your own to provide a background for singing or playing other instruments. **Drum-Key** is suitable for the serious musician or the novice — or for just having fun. And it's an excellent way to learn rhythm.

A **Drum-Key** package in your Apple, connected to your stereo provides full programmability and storage capacity for 100 rhythm patterns and 26 songs. A scrolling Hi-Res graphic screen displays instrument staves for easy learning, quick

notation and editing.

- Real-time recording or play-along
- On-screen composition and editing
- Programmable tempo, time signature, pattern length
- Selectable timing correction for professional results
- Selectable audio/visual metronome
- Sync Out for external synthesizers
- Professional demo patterns and songs included

The complete **Drum-Key** package, including interface card and program diskette, all for only: **\$139.95**

To hear **Drum-Key** in action, call 215-296-8242. To order **Drum-Key**, call toll free 800-441-1003. Most major credit cards are welcomed. Or send a check to:

PVI Great Valley Parkway
Malvern, PA 19355



SANYO MONITOR SALE!!

Circle 274 on Reader Service card.



9" Data Monitor

- 80 Columns x 24 lines
- Green text display
- Easy to read - no eye strain
- Up front brightness control
- High resolution graphics
- Quick start - no preheating
- Regulated power supply
- Attractive metal cabinet
- UL and FCC approved

- **15 Day Free Trial - 90 Day Immediate Replacement Warranty**

9" Screen - Green Text Display	\$ 69.00
12" Screen - Green Text Display (anti-reflective screen)	\$ 99.00
12" Screen - Amber Text Display (anti-reflective screen)	\$ 99.00
12" Screen-Super 1000 Line Amber Text Display	\$129.00
14" Screen - Color Monitor (national brand)	\$249.00

Display Monitors From Sanyo

With the need for computing power growing every day, Sanyo has stepped in to meet the demand with a whole new line of low cost, high quality data monitors. Designed for commercial and personal computer use. All models come with an array of features, including up-front brightness and contrast controls. The capacity 5 x 7 dot characters as the input is 24 lines of characters with up to 80 characters per line.

Equally important, all are built with Sanyo's commitment to technological excellence. In the world of Audio/Video, Sanyo is synonymous with reliability and performance. And Sanyo quality is reflected in our reputation. Unlike some suppliers, Sanyo designs, manufactures and tests virtually all the parts that go into our products, from cameras to stereos. That's an assurance not everybody can give you!



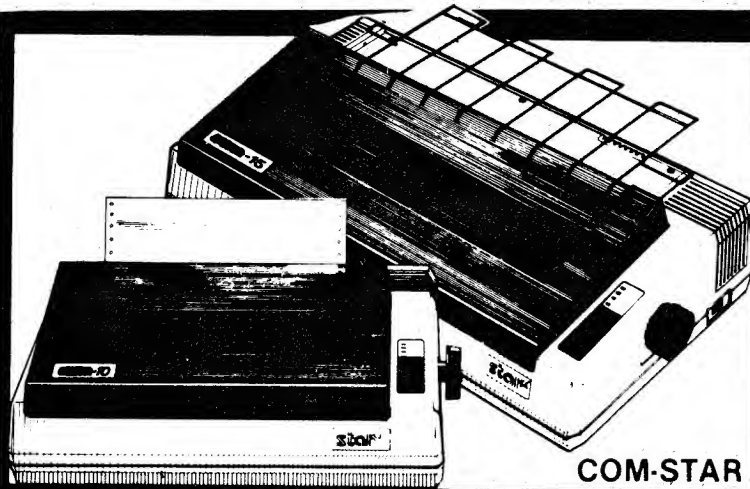
- LOWEST PRICES • 15 DAY FREE TRIAL • 90 DAY FREE REPLACEMENT WARRANTY
- BEST SERVICE IN U.S.A. • ONE DAY EXPRESS MAIL • OVER 500 PROGRAMS • FREE CATALOGS

Add \$10.00 for shipping, handling and insurance. Illinois residents please add 6% tax. Add \$20.00 for CANADA, PUERTO RICO, HAWAII orders. WE DO NOT EXPORT TO OTHER COUNTRIES.

Enclose Cashiers Check, Money Order or Personal Check. Allow 14 days for delivery, 2 to 7 days for phone orders, 1 day express mail! Canada orders must be in U.S. dollars. Visa - MasterCard - C.O.D.

PROTECTO
ENTERPRIZES (WE LOVE OUR CUSTOMERS)
 BOX 550, BARRINGTON, ILLINOIS 60010
 Phone 312/382-5244 to order

80 COLUMN PRINTER SALE—\$149.00*



COM-STAR T/F

Tractor
Friction
Printer

only **\$199****

• 15 Day Free Trial - 180 Day Immediate Replacement Warranty

• **Lowest Priced, Best Quality, Tractor-Friction Printers in the U.S.A.**

- **Fast 80-120-160 Characters Per Second** • **40, 46, 66, 80, 96, 132 Characters Per Line Spacing**
- **Word Processing** • **Print Labels, Letters, Graphs and Tables** • **List Your Programs**
- **Print Out Data from Modem Services** • **"The Most Important Accessory for Your Computer"**

*STX-80 COLUMN PRINTER—\$149.00

Prints full 80 columns. Super silent operation, 60 CPS, prints Hi-resolution graphics and block graphics, expanded character set, exceptionally clear characters, fantastic print quality, uses inexpensive thermal paper! Best thermal printer in the U.S.A.! (Centronics Parallel Interface).

**DELUXE COMSTAR T/F 80 CPS PRINTER—\$199.00

The COMSTAR T/F (Tractor Friction) PRINTER is exceptionally versatile. It prints 8½" x 11" standard size single sheet stationary or continuous feed computer paper. Bi-directional, impact dot matrix, 80 CPS, 224 characters. (Centronics Parallel Interface).

Premium Quality—120 CPS COMSTAR T/F SUPER-10X PRINTER—\$289.00

COMSTAR T/F (Tractor Friction) SUPER-10X PRINTER gives you all the features of the COMSTAR T/F PRINTER plus a 10" carriage, 120 CPS, 9 x 9 dot matrix with double strike capability for 18 x 18 dot matrix (near letter quality), high resolution bit image (120 x 144 dot matrix), underlining, back spacing, left and right margin settings, true lower decenders with super and subscripts, prints standard, italic, block graphics

and special characters, plus 2K of user definable characters! The COMSTAR T/F SUPER-10X PRINTER was Rated No. 1 by "Popular Science Magazine." It gives you print quality and features found on printers costing twice as much!! (Centronics Parallel Interface) (Better than Epson FX 80).

Premium Quality—120 CPS COMSTAR T/F SUPER-15½" PRINTER—\$379.00

COMSTAR T/F SUPER 15½" PRINTER has all the features of the COMSTAR T/F SUPER-10X PRINTER plus a 15½" carriage and more powerful electronics components to handle large ledger business forms! (Better than Epson FX 100).

Superior Quality SUPER HIGH SPEED—160 CPS COMSTAR T/F 10" PRINTER—\$489.00

SUPER HIGH SPEED COMSTAR T/F (Tractor Friction) PRINTER has all the features of the COMSTAR SUPER-10X PRINTER plus SUPER HIGH SPEED PRINTING—160 CPS, 100% duty cycle, 8K buffer, diverse character fonts, special symbols and true decenders, vertical and horizontal tabs. RED HOT BUSINESS PRINTER at an unbelievable low price!! (Serial or Centronics Parallel Interface)

Superior Quality SUPER HIGH SPEED—160 CPS COMSTAR T/F 15½" PRINTER—\$579.00

SUPER HIGH SPEED COMSTAR T/F 15½" PRINTER has all the features of the SUPER HIGH SPEED COMSTAR T/F 10" PRINTER plus a 15½" carriage and more powerful electronics to handle larger ledger business forms! Exclusive bottom paper feed!!

PARALLEL INTERFACES

For VIC-20 and COM-64—\$49.00
For All Apple Computers—\$79.00

NOTE: Other printer interfaces are available at computer stores!

Double Immediate Replacement Warranty

We have doubled the normal 90 day warranty to 180 days. Therefore if your printer fails within "180 days" from the date of purchase you simply send your printer to us via United Parcel Service, prepaid. We will IMMEDIATELY send you a replacement printer at no charge, prepaid. This warranty, once again, proves that WE LOVE OUR CUSTOMERS!

Add \$17.50 for shipping, handling and insurance. WE DO NOT EXPORT TO OTHER COUNTRIES EXCEPT CANADA.

Enclose Cashiers Check, Money Order or Personal Check. Allow 14 days for delivery, 2 to 7 days for phone orders, 1 day express mail! Canada orders must be in U.S. dollars. VISA — MASTER CARD ACCEPTED. We ship C.O.D.

SUPER-10"

ABCDEFGHIJKLMNOPQRSTUVWXYZ 1234567890

PROTECTO ENTERPRISES (WE LOVE OUR CUSTOMERS)

BOX 550, BARRINGTON, ILLINOIS 60010
Phone 312/382-5244 to order

The Compleat Text File Primer

Part 4—Text Files

Our series gets down to the heart of the matter.

by Lee Swoboda

In the previous three articles in this series, I have examined data as it appears on disk, in the computer's memory and passing between. I will now discuss one of the most useful forms for data—the text file. The two types of text files, sequential and random access, are different, but they share some similarities.

Files, Records and Fields

Data starts, of course, as individual characters: alphabetic, numeric or symbolic. Text processing treats numbers the same way it does alphabetic characters. For example, the number "1" is represented in a text file as the ASCII character 49 (see page 138 of

The Applesoft Manual), not as the value 1.00000. Numbers occupy one byte of a text file per digit rather than the seven bytes they occupy in a variable table (see Part 2 of this series in the April *inCider*).

These characters cannot be left to go scampering around in memory unattended, so we collect them into groups of related characters called *fields* (see Figure 1). A field is a discrete data element—a name, for example.

We can also collect related data fields into related groups called *records*. A record is the unit of data that DOS processes in text files, although I will also discuss data management at the field level later in this article. A

record might contain several data fields which represent first name, last name, and address.

We can now collect related records into groups called *files*. A file might contain the name/address records for all our friends and relatives. There is one higher unit—the data base—but that is a study in itself, so I'll limit this discussion to the file level and below.

An analogy will help illustrate the relationships between fields, records and files. Visualize the classic filing cabinet: the two-drawer filing cabinet. All the letters you receive might be stored in the top drawer. You now have a *file* of incoming correspondence. Each letter is a *record*. Each sentence is made up of individual *characters* forming a discrete unit analogous to a *field* (see Figure 2).

Now let's reverse the analogy. If our file is merely a collection of random letters in the file drawer, it is of limited use. When you want to find something, you will have to riffle through the drawer, examining each letter until you find the one you want. Obviously, you need to arrange the letters in some logical fashion which will ease your search. The most apparent groupings would be either by date or by originator. Let's select the latter. You would prepare one folder for each

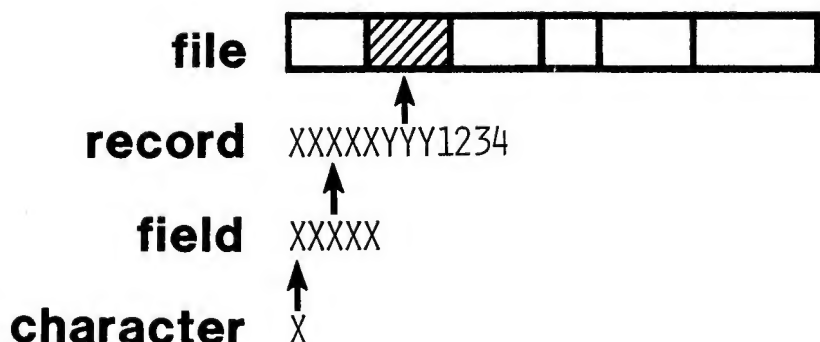


Figure 1. Components of a text file.

You can write to Lee Swoboda c/o Padapple Computer Consulting, 1451 NE Paulson Road, Poulsbo, WA 98370.

originator and file all letters from that person in the same folder.

To find a specific letter, you engage in a two-level search. First, you look for the correct file folder. Second, you search through all letters in that folder to find the one you want. If the letters are arranged in the folders by date, that would facilitate the search even more.

Now let's apply this to text files. If you store data in a text file randomly, you must search through all the data every time you want to find something. Arranging records in a file logically will speed searches and sorts, as I will discuss in the next two articles in this series.

File Structures

Visualize a glass tube and an egg carton. These represent sequential and random access text files, respectively.

Place a stopper in both ends of the glass tube and select an egg carton with a lid. The function of the stopper and lid is, of course, to make certain the contents don't fall out. Both types of text files also have "lids." When the file is "closed," it is protected from losing data or gaining undesirable data. Just as both our containers must be opened to gain access to the contents, sequential and random access files must be "opened" before the contents are available.

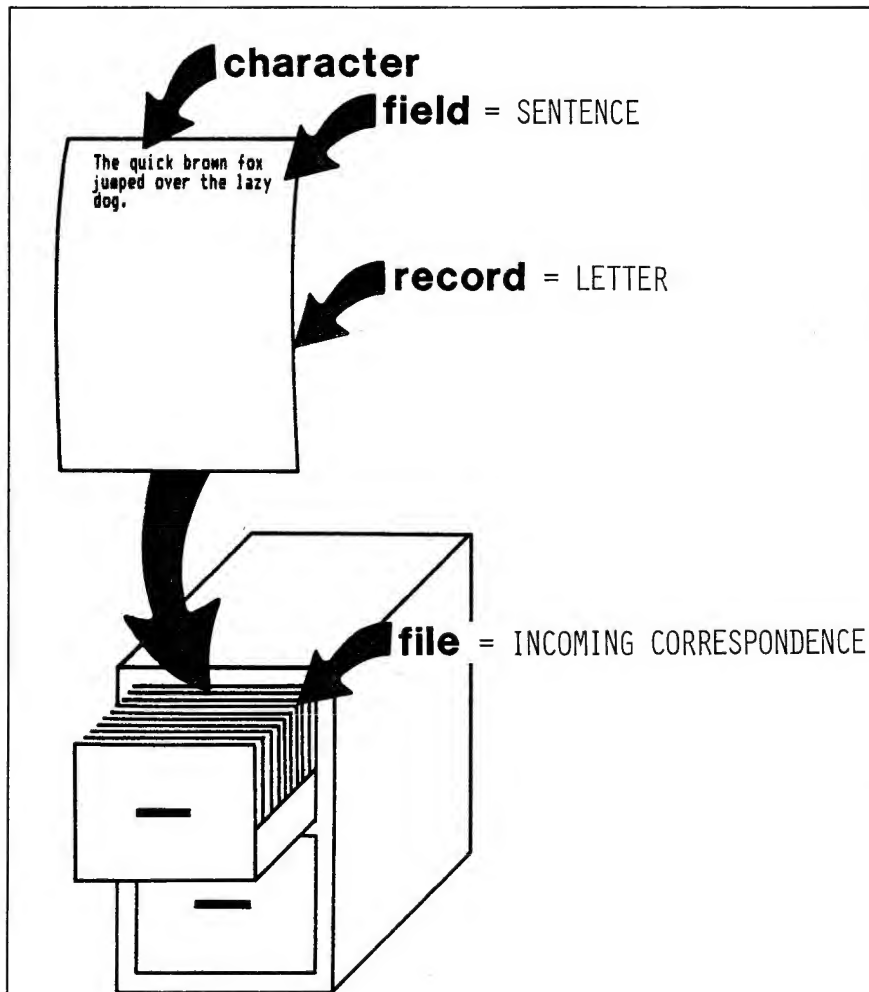


Figure 2. File analogies.

THE STATISTICS SERIES

**FLEXIBLE • ACCURATE
EASY-TO-USE**

Human Systems Dynamics programs are used by leading universities and medical centers. Any program that doesn't suit your needs can be returned within 10 days for full refund. Designed for use with Apple II 48K, 1 or 2 Disk Drives, 3.3 DOS, ROM Applesoft.

NEW

REGRESS II

\$150

Complete Multiple Regression Series
Stepwise, Simultaneous Solutions
Forward, Backward Solutions
Auto Power Polynomial Solutions
Data Smoothing, Transformations
Correlation and Covariance Matrices
Residuals Analysis, Partial Correlation
Research Data Base Management
Count, Search, Sort, Review/Edit
Add, Delete, Merge Files
Curve Fit. Hi-Res X-Y Plot

STATS PLUS

\$200

Complete General Statistics Package
Research Data Base Management
Count, Search, Sort, Review/Edit
Add, Delete, Merge Files
Compute Data Fields, Create Subfiles
Produce Hi-Res Bargraphs, Plots
1-5 Way Crosstabulation
Descriptive Statistics for All Fields
Chi-Square, Fisher Exact, Signed Ranks
Mann-Whitney, Kruskal-Wallis, Rank Sum
Friedman Anova by Ranks
10 Data Transformations
Frequency Distribution
Correlation Matrix, 2 Way Anova
r, Rho, Tau, Partial Correlation
3 Variable Regression, 3 t-Tests

ANOVA II

\$150

Complete Analysis of Variance Package
Analysis of Covariance, Randomized Designs
Repeated Measures, Split Plot Designs
1 to 5 Factors, 2 to 36 Levels Per Factor
Equal N or Unequal N, Anova Table
Descriptive Statistics, Marginal Means
Cell Sums of Squares, Data File Creation
Data Review/Edit, Data Transformations
File Combinations, All Interactions Tested
High Resolution Mean Plots, Bargraphs



HUMAN SYSTEMS DYNAMICS

To Order — Call (213) 993-8536
or Write

HUMAN SYSTEMS DYNAMICS
9010 Reseda Blvd. Suite 222
Northridge, CA 91324



Dealer Inquiries Invited



Sequential Files

Now imagine three different color marbles, red, green and blue, a little smaller than the inside diameter of the glass tube. Hold the glass tube vertically. Take the top stopper out and drop the marbles into the tube. Replace the stopper. You have just created a sequential text file (in analogy, of course). Now remove the bottom cork and let the marbles drop out. You have just read a sequential text file.

Note some of the characteristics that our analogy shares with the real sequential text file:

- The height of the marbles in the tube depends on the number and size of the marbles. The length of a sequential text file depends on the number and length of the records it contains.
- The marbles came out in the same order in which they went in. This is the principle known as *FIFO*: First In,

First Out. Sequential text files have a *FIFO* format. The first record you write to the file will be the first record you read.

- In order to get the blue marble, you must first take the red and green marbles out of the tube. A sequential text file is so named because the records are in sequence. In order to find the third record, you must first read the first and second records.

Sequential File Commands

Sequential text files have a greater variety of commands available than do random files. Let's examine each command, including examples.

OPEN

FORMAT: PRINT D\$ "OPEN FILENAME"

Note: D\$ is CTRL-D or CHR\$(4), the ASCII value 4, which calls DOS. (See page 30 of *The DOS Manual*.)

A file can be opened to read data

from the file or to write data to the file, but not both. Recall from Part 3 of this series that DOS reserves a file buffer for each file that is open. Therefore, unless we change MAXFILES, we can have three files (either sequential or random) open at any one time.

The OPEN command sets the file pointer to the start of the file. This means that, unless we use the POSITION command or "B" parameter, the file will be read from the beginning.

CLOSE

FORMAT: PRINT D\$ "CLOSE FILENAME"

Here again, we have an option. If the command to close a file quotes the file name (PRINT D\$ "CLOSE FILENAME"), DOS will close only that file, leaving all other open files open. If the command does not quote the file name (PRINT D\$ "CLOSE"), DOS will close all open files. Generally, a program has only one file open at a time, so we can save some memory (and typing) by not using the file name.

WRITE

FORMAT: PRINT D\$ "OPEN FILENAME"
PRINT D\$ "WRITE FILENAME"

Once OPEN has reserved a file buffer for FILENAME, we can specify that we want to write data to the disk with WRITE. When a file is set to write, all PRINT commands will send data to the disk to be stored. Data being sent to the disk will not be echoed to the screen, as is the case with the printer.

Since OPEN sets the file pointer to the beginning of the file, the file will be written FIFO, overwriting any data that may have existed in a previous version of the file.

However, both the READ and WRITE routines in the DOS file handler (see Part 3 of this series) open the file if it is closed. You can switch back and forth between READ and WRITE without having to close and open the file. Since READ and WRITE do not create a file if one does not exist, you must use OPEN for new files.

READ

FORMAT: PRINT D\$ "OPEN FILENAME"
PRINT D\$ "READ FILENAME"

We can also designate a file to be read from a disk. As with WRITE, OPEN sets the file pointer to the start of

Circle 40 on Reader Service card.



Check Our Services

We'll supply you with the best values, at the best prices, delivered when you need them. Everytime.

PRESSURE SENSITIVE LABELS

Price per Thousand	5-55	60-115	120 +
3 1/2" x 15/16" Single	\$2.99	\$2.84	\$2.56
4" x 17/16" Single	\$5.55	\$5.27	\$4.74

APPLE PRINTER RIBBONS

Designed to fit Apple Printers

	1-11	12-23	24 +
Dot Matrix	\$7.99	\$7.19	\$6.39
LQP Multistrike	\$7.99	\$7.19	\$6.39

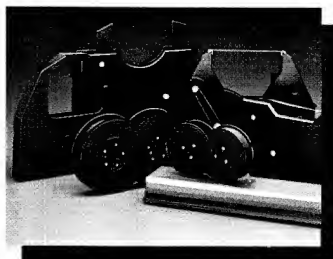
Call or write for our free catalogue.

Toll free: 1-800-343-7706.

In Massachusetts: 617-963-7694.

P.O. Box 103, Randolph, MA 02368

CHECK-MATE
COMPUTER SUPPLIES INC.



the file, so the data is read FIFO. With a file set to be read, INPUT and GET both seek data from the disk rather than the keyboard.

Obviously, a file cannot be open to both read and write, although one file can be opened to write at the same time another is opened to read. This is the standard method for merging two files, such as daily time records into annual time records in a payroll pro-



Figure 3. Sequential text file structure.

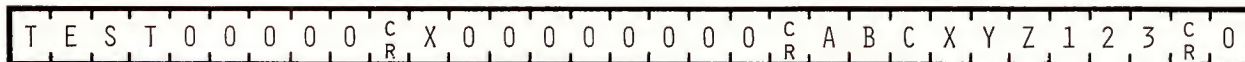


Figure 4. Random access text file structure.

gram. The two files to be merged are opened to read, while a third merge file is opened to write. The two source files are searched for matching data, which is then written to the merge file. This function, I presume, is why the default value for MAXFILES is three.

APPEND

FORMAT: PRINT D\$ "APPEND
FILENAME"
PRINT D\$ "WRITE FILENAME"

The APPEND command functions similarly to the OPEN command, except that the file pointer is set to the end of the file rather than the beginning. APPEND is useful for adding records to unordered sequential files, because it precludes having to read all the records in the file into memory just to add one.

Let's return for a moment to our analogous glass tube. Without APPEND, to add a new marble to the tube, we would have to remove the bottom stopper, take all the marbles from the tube and replace the bottom stopper (read the file). Then we would need to remove the top stopper and drop all the marbles, including the new one, back into the tube one by one, in order (write the file). APPEND allows us to add a new marble

Circle 32 on Reader Service card.



The FingerPrint™ parallel printer interface card lets you instantly print *any* graphics or text (even double hi-res), in color or black & white. And that's just the beginning!

- Puts *any* program on hold *any* time, including games.
- Built-in ROM provides lots of functions commanded by our button or your programs.
- 2K of user RAM lets you dream up new functions.
- Compatible with *any* parallel printer.
- Touch-sensitive button adheres to your keyboard.
- Comes with printer cable and a disk loaded with programs. Now with VisiCalc enhancements.

Seize control of your Apple II, Apple II+ or Apple IIe.

ORDER TOLL-FREE
1-800-528-6050

Ext. 2112
In Arizona: 1-800-352-0458

THIRDWARE
COMPUTER PRODUCTS™



4747 NW 72nd Avenue, Miami, FL 33166

Apple, VisiCalc, Quadjet, FingerPrint and Thirdware Computer Products are trademarks, respectively, of Apple Computer, Inc., Visicorp, Quadram Corp. and Precision Software, Inc.

\$50

STUDENT STATISTICS

Are you tired of doing statistics problems on a calculator?

Use **HSD STATS™** on an Apple II/IIe and make your life easier. You can read the manual first or just boot the program disk and make your choices from the screen menu.

DATA FILES

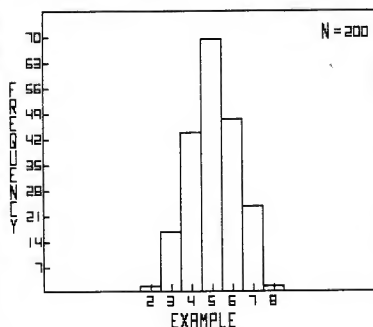
Save your data to disk files for later use, join data files, and transform data.

ANALYSES

Get means and standard deviations, z-scores, frequency distributions with bargraphs, chi-squares, Pearson correlations, linear regressions, scatterplots, and 3 t-tests.

OUTPUT

Obtain test results with p-values on monitor or printer.



Researchers at leading universities and medical centers have used **HSD STATS™** for years. They paid \$99.95, but now you can get the complete program package for only \$50.

Save time and aggravation. Use **HSD STATS™** from Human Systems Dynamics, publishers of The Statistics Series™ sophisticated statistics programs for professionals.

HSD STATS™ comes with a 10 day money back guarantee.

Apple II, 48K, 1 or 2 Drives, ROM Applesoft.



HUMAN SYSTEMS DYNAMICS

To Order — Call (318) 886-4281
or Write

HUMAN SYSTEMS DYNAMICS
9010 Reseda Blvd. Suite 222/Dept.C
Northridge, CA 91324



Dealer Inquiries Invited



Program listing. Illustration of text file commands.

```

10 HOME
20 PRINT "THE COMPLEAT TEXT FILE PRIMER"
30 PRINT "BY LEE SWOBODA"
40 PRINT "PART 4 -- TEXT FILES"
50 PRINT "=====
60 PRINT
70 PRINT "----- SEQUENTIAL TEXT FILES -----"
80 PRINT
90 PRINT "1 -- CREATE" TAB(20)"4 -- APPEND"
100 PRINT "2 -- READ" TAB(20)"5 -- POSITION"
110 PRINT "3 -- MAP" TAB(20)"6 -- 'B' PARAMETER"
120 PRINT
130 PRINT "----- RANDOM ACCESS TEXT FILES -----"
140 PRINT
150 PRINT "7 -- CREATE" TAB(20)"9 -- MAP"
160 PRINT "8 -- READ" TAB(20)"10 -- 'B' PARAMETER"
170 PRINT
180 PRINT "----- DATA MANAGEMENT -----"
190 PRINT
200 PRINT "11 - BLOCKED" TAB(20)"12 - DELIMITED"
210 VTAB 22
220 INPUT "WHICH SELECTION? - ";A$
230 A = VAL(A$)
240 IF A < 1 OR A > 13
    GOTO 210
250 HOME
260 ON A GOTO 1000, 2000, 3000, 4000, 5000, 6000, 7000,
    8000, 9000, 10000, 11000, 13000

1000 REM -----
1010 REM LISTING 4-1
1020 REM -----

1030 D$ = CHR$(4)
1040 PRINT D$"OPEN TEST.SEQ"
1050 PRINT D$"WRITE TEST.SEQ"
1060 FOR I = 1 TO 3
1070 READ A$(I)
1080 PRINT A$(I)
1090 NEXT I
1100 PRINT D$"CLOSE TEST.SEQ"
1110 DATA "TEST", "X", "ABCXYZ123"
1999 RESTORE
: GOTO 10

2000 REM -----
2010 REM LISTING 4-2
2020 REM -----

2030 D$ = CHR$(4)
2040 PRINT D$"OPEN TEST.SEQ"
2050 PRINT D$"READ TEST.SEQ"
2060 FOR I = 1 TO 3
2070 INPUT A$(I)
2080 PRINT "*"A$(I)*"
2090 NEXT I
2100 PRINT D$"CLOSE TEST.SEQ"
2999 VTAB 23
: PRINT "PRESS ANY KEY ";
: CALL - 756
: GOTO 10

3000 REM -----
3010 REM LISTING 4-3
3020 REM -----

3030 D$ = CHR$(4)
3040 PRINT D$"OPEN TEST.SEQ"
3050 PRINT D$"READ TEST.SEQ"
3060 PRINT TAB(15)"TEST.SEQ"
3070 PRINT "=====
: PRINT
3080 PRINT "----- FILE CONTENTS -----"

```

Listing continued.

Listing continued.

```

3090      FOR I = 1 TO 17
3100      GET A$
3110      PRINT CHR$(1);
3120      IF A$ = CHR$(13)
          THEN INVERSE
          : PRINT "^";
          : NORMAL
          : GOTO 3140
3130      PRINT A$;
3140      NEXT I
3150      PRINT "0";
3160      PRINT
          : PRINT
          : INVERSE
          : PRINT "^";
          : NORMAL
          : PRINT " = CARRIAGE RETURN"
3170      PRINT
          : PRINT D$"CLOSE TEST.SEQ"
3180      PRINT
          : PRINT
3190      PRINT "----- DISK SECTOR MAP -----"
3200      PRINT "00- D4 C5 D3 D4 8D D8 8D C1  TEST.X.A"
3210      PRINT "08- C2 C3 D8 D9 DA B1 B2 B3  BCXYZ123"
3220      PRINT "10- 8D 00 00 00 00 00 00 00  ...."
3999      VTAB 23
          : PRINT "PRESS ANY KEY ";
          : CALL - 756
          : GOTO 10

4000      REM -----
4010      REM LISTING 4-4
4020      REM -----

4030      D$ = CHR$(4)
4040      PRINT D$"APPEND TEST.SEQ"
4050      PRINT D$"WRITE TEST.SEQ"
4060      PRINT "XXX"
4070      PRINT D$"CLOSE TEST.SEQ"
4080      PRINT D$"OPEN TEST.SEQ"
4090      PRINT D$"READ TEST.SEQ"
4100      FOR I = 1 TO 4
4110      INPUT A$(I)
4120      PRINT A$(I)
4130      NEXT I
4140      PRINT D$"CLOSE TEST.SEQ"
4999      FOR I = 1 TO 2000
          : NEXT
          : PRINT D$"DELETE TEST.SEQ"
          : GOTO 1000

5000      REM -----
5010      REM LISTING 4-5
5020      REM -----

5030      D$ = CHR$(4)
5040      PRINT D$"OPEN TEST.SEQ"
5050      PRINT D$"POSITION TEST.SEQ, R0"
5060      PRINT D$"READ TEST.SEQ"
5070      INPUT A$
5080      PRINT A$
5090      PRINT D$"POSITION TEST.SEQ, R0"
5100      PRINT D$"READ TEST.SEQ"
5110      INPUT A$
5120      PRINT A$
5130      PRINT D$"CLOSE TEST.SEQ"

```

Listing continued.

by merely removing the top stopper and dropping the new marble into the tube.

POSITION

FORMAT: PRINT D\$ "OPEN
FILENAME"
PRINT D\$ "POSITION FILENAME, R3"
PRINT D\$ "READ FILENAME"
or PRINT D\$ "OPEN FILENAME"
PRINT D\$ "POSITION FILENAME, R3"
PRINT D\$ "WRITE FILENAME"

POSITION moves the file marker upward through the file, beginning at the start of the file, where OPEN places it. POSITION is essentially a carriage return counter. It moves the file marker N+1 carriage returns from the current position of the marker. In the format examples above, the marker is at the beginning of the first record after the OPEN command. The

Circle 519 on Reader Service card.

FREE? DISKETTES

SAVE MONEY! Apple II+/e users can use the diskette flip side, if another "write enable" notch is correctly made.



The **DISK-NOTCHER** by QUORUM quickly **SOLVES** that **PROBLEM**. It's like **FREE DISKETTES!**

- Stainless Steel Guide
- Easy Leverage Handle
- Clippings Catcher
- Square Notch Cut
- Black Finish
- Get THE BEST!

Certifix™

BE SAFE! Your 'FREE' disk is **CERTIFIED 100% ERROR FREE** with **CERTIFIX** by QUORUM. It **'LOCKS OUT' DISK FLAWS** and lets you use the rest. Displays status report & saves it to disk. Next, **CERTIFIX** automatically formats then offers to initialize with genuine Apple DOS 3.3 too. Great for testing economy disks. **CERTIFY, FIX & INITIALIZE** every disk with **CERTIFIX!**

100% Money Back Satisfaction Guarantee!

DISK NOTCHER is \$14.95
CERTIFIX™ is just \$24.95
ONLY \$29.95 for BOTH!

Add \$1.50 s/h • CA add 6% % tax

QUORUM INTERNATIONAL, Unltd.
INDUSTRIAL STATION P.O. BOX 2134-1C
OAKLAND, CA 94614

Listing continued.

```

5999  VTAB 23
      : PRINT "PRESS ANY KEY ";
      : CALL - 756
      : GOTO 10

6000  REM -----
6010  REM LISTING 4-6
6020  REM -----

6030  D$ = CHR$(4)
6040  PRINT D$"OPEN TEST.SEQ"
6050  PRINT D$"READ TEST.SEQ, B12"
6060  INPUT A$
6070  PRINT CHR$(1)A$
6080  PRINT D$"CLOSE TEST.SEQ"
6999  VTAB 23
      : PRINT "PRESS ANY KEY ";
      : CALL - 756
      : GOTO 10

7000  REM -----
7010  REM LISTING 4-7
7020  REM -----

7030  D$ = CHR$(4)
7040  PRINT D$"OPEN TEST.RAN, L9"
7050      FOR I = 1 TO 3
7060          PRINT D$"WRITE TEST.RAN, R" I
7070          READ A$(I)
7080          PRINT A$(I)
7090      NEXT I
7100  PRINT D$"CLOSE TEST.RAN"
7110  DATA "TEST", "X", "ABCXYZ123"
7999  RESTORE
      : GOTO 10

8000  REM -----
8010  REM LISTING 4-8
8020  REM -----

8030  D$ = CHR$(4)
8040  PRINT D$"OPEN TEST.RAN, L9"
8050      FOR I = 1 TO 3
8060          PRINT D$"READ TEST.RAN, R" I
8070          INPUT A$(I)
8080          PRINT "*"A$(I)*"
8090      NEXT I
8100  PRINT D$"CLOSE TEST.RAN"
8999  VTAB 23
      : PRINT "PRESS ANY KEY ";
      : CALL - 756
      : GOTO 10

9000  REM -----
9010  REM LISTING 4-9
9020  REM -----

9030  D$ = CHR$(4)
9040  PRINT D$"OPEN TEST.RAN, L9"
9050  PRINT TAB(15)"TEST.RAN"
9060  PRINT "===== "
      : PRINT
9070  PRINT "----- FILE CONTENTS ----- "
9080      FOR I = 1 TO 3
9090          PRINT D$
9100          VTAB 6
          : HTAB(9*(I-1)+1)
9110          PRINT D$"READ TEST.RAN, R" I

```

Listing continued.

**"The advancement
is from the current
file marker position,
not from the
beginning of the file."**

"R3" parameter (for Relative field position 3) moves the marker three fields, which places it at the beginning of the fourth record. An INPUT command after the READ command would then obtain the fourth record from the file.

Note that the "R" parameter in sequential files relates to a *relative* position in the file, not an absolute (unlike the "R" parameter in random files). The advancement is from the current file marker position, not from the beginning of the file, except the first time the POSITION command is used after the file is opened.

POSITION must be succeeded by READ or WRITE, since it only repositions the file marker.

"R" Parameter

See "Position," above.

"B" Parameter

FORMAT: PRINT D\$ "OPEN FILENAME"
PRINT D\$ "READ FILENAME, B13"
or PRINT D\$ "OPEN FILENAME"
PRINT D\$ "WRITE FILENAME, B13"

The "B" parameter is similar in function to the POSITION command, in that it also moves the file marker. There are two differences, however.

- 1) The "B" stands for "byte," so the "B" command counts bytes, not carriage returns.
- 2) The measurement is absolute, not relative. In the above format example, the file marker is placed N + 1 or 14 bytes from the beginning of the file.

When the file is set to be read, INPUT will return all data between the file marker and the next carriage return. GET will return the next character. See "Cautions" below for uses of the "B" parameter with WRITE.

EXEC

FORMAT: PRINT D\$ "EXEC FILENAME"

EXEC is a sleeper command. It pos-

sesses far more power and finesse than the average program demonstrates. It allows the programmer to enter direct commands and program code or sub-routines under computer control just as if they were being entered from the keyboard. What this means is that we can create a text file that *looks* like a Basic program, and, by EXECing it, add it to a running program.

Illustrating Sequential File Commands

The listing (subdivided into Listings 1-12b) illustrates the use of the various text file commands. Enter the listings and run the program. The menu in lines 10-260 will allow you to select the command you desire. The sub-listings are "typical" and can be modified easily for use in your own programs.

Listings 1 through 6 illustrate the commands we have discussed. Listing

**"It possesses
far more power
and finesse than
the average program
demonstrates."**

1 creates a sequential text file, TEST.SEQ, with three records: TEST, X and ABCXYZ123. Note that the OPEN command is mandatory here, since the file does not exist the first time you run the program.

Listing 2 reads the file TEST.SEQ in the usual manner, with the DOS command INPUT (as opposed to the Applesoft command INPUT). If the sample strings in the text file had contained any "illegal" characters (com-

mas or colons), we would have had to use the DOS command GET to retrieve the data (see pages 53-54 of *The DOS Manual*).

Listing 3 maps the text file, showing the ASCII value of each character in the file. This produces a pattern like Figure 3. This figure also shows an actual disk map of the text file to illustrate how a sequential text file looks on disk.

All the values are in hexadecimal, of course, because that is the way they are stored on the disk. The left-most column is the address of the byte within the sector (only the pertinent part of the sector is shown). The right-most column shows the ASCII equivalents of the values in each of the other columns. The middle eight columns represent the hexadecimal value of each character. In all cases, the Most Significant Bit (MSB) is high. The

Circle 139 on Reader Service card.

PORTFOLIO

"From beginning to end, it gleams with quality"

SOFTALK, December 1983

Every now and then, a program comes along that 'does it all.' Take the one that IBM® owners are so proud of. You know, the program they paid \$500 for.

Well now there's this new program called **PORTFOLIO**, designed for the Apple® computer. It's so revolutionary, we don't even know what to call it.

"Simulation doesn't begin to do this one justice. Calling it a game is an insult. Educational? Too dry. Part of a new era of software spanning all of the above? Even that doesn't go far enough."

— SOFTWARE REVIEW
February 1984

Apple owners, go ask your local dealer about **PORTFOLIO**. Dealers, if you haven't seen **PORTFOLIO**, it's about time you did.

FLEXIBLE SOFTWARE 804 · 979-0973
134-10 Ivy Drive, Charlottesville, Virginia 22901

WANTED

"Buyers," & We'll pay the shippin'

• CALL FREE (800) 654-4058 •

"Call For Reduced Prices At Various Quantities"

Verbatim.

5 1/4" sin-side dbi-den.	2⁴⁰
5 1/4" dbi-side dbi-den.	3⁴⁵
5 1/4" sin-side quad	3²⁰
5 1/4" dbi-side quad	4²⁰
8" sin-side sin-den.	2⁷⁵
8" sin-side dbi-den.	3⁰⁵
8" dbi-side dbi-den.	3⁴⁰

Head Cleaning
Kits **5²⁰**
Refills . . **9⁵⁵**

Dysan CORPORATION

5 1/4" sin-side dbi-den.	3²⁰
5 1/4" dbi-side dbi-den.	4²⁰
5 1/4" sin-side quad	4⁴⁵
5 1/4" dbi-side quad	4⁹⁵
8" sin-side sin-den.	3⁴⁵
8" sin-side dbi-den.	4⁴⁵
8" dbi-side dbi-den.	4⁹⁵

We Stock
"Bulk-Packed"
Diskettes

3M Scotch®

5 1/4" sin-side dbi-den.	2²⁰
5 1/4" dbi-side dbi-den.	3²⁰
8" sin-side sin-den.	2³⁵
8" sin-side dbi-den.	2⁹⁵
8" dbi-side dbi-den.	3⁹⁰

Disk Minder
• Smoked Plastic
• Holds 75 Disks
16⁷⁵ ea

Prices per ea.
10 per box

the **Diskette Connection™**



P.O. Box 1674
Bethany, OK.
73008



* (Continental U.S. only. Add 3% on orders under 40.00)

value 8D is a carriage return. The other values are the high-range ASCII values (128 plus ASCII) of the letters and numbers in the file.

Listing 4 shows how APPEND is used. Remember, however, that APPEND adds the newest record to the end of the file, so if your data is organized within the file (sorted alphabetically, for example), APPEND will destroy the order.

Listing 5 shows the use of the POSITION command. Note that the parameter R0 advances the file pointer one record. The first call (line 5050) begins with the file pointer at the head of the file, where OPEN puts it. The second call (line 5090) moves the file pointer one record, which is the sec-

**"Now take your
same three marbles
and drop them
in the cups of the
egg carton."**

ond record. If we had opened the file and issued an R2 parameter, we would have found ourselves in the third record (ABCXYZ123), so the function of POSITION when it occurs immediately after OPEN is similar to the R parameter in random files.

Listing 6 shows the function of the "B" parameter. Note that the "B" parameter measures its position from the beginning of the text file.

Both POSITION and the "B" parameter can be used with WRITE as well as READ.

Random Access Files

Now take your same three marbles and drop them in the cups of the egg carton (open the lid first). You have just created a random access text file. Pick up the blue marble. You have just read a random file. Note the similarities between our analogy and the random file:

Listing continued.

```

9120      GET A$
9130      PRINT CHR$(1);
9140      J = J + 1
9150      IF A$ = CHR$(13)
          THEN INVERSE
: PRINT "^";
: NORMAL
          : FOR K = 1 TO 9 - J
          : PRINT "0";
          : NEXT K
: J = 0
: GOTO 9180
9160      PRINT A$;
9170      GOTO 9120
9180      NEXT I
9190      PRINT
: PRINT
: INVERSE
: PRINT "^";
: NORMAL
: PRINT " = CARRIAGE RETURN"
9200      PRINT
: PRINT D$"CLOSE TEST.RAN"
9210      PRINT
: PRINT
9220      PRINT "----- DISK SECTOR MAP -----"
9230      PRINT "00- 00 00 00 00 00 00 00 00 ..... "
9240      PRINT "08- 00 D4 C5 D3 D4 8D 00 00 .TEST..."
9250      PRINT "10- 00 00 D8 8D 00 00 00 00 ...X...."
9260      PRINT "18- 00 00 00 C1 C2 C3 D8 D9 ...ABCXY"
9270      PRINT "20- DA B1 B2 B3 8D 00 00 00 Z123...."
9999      VTAB 23
: PRINT "PRESS ANY KEY ";
: CALL - 756
: GOTO 10

10000 REM -----
10010 REM LISTING 4-10
10020 REM -----

10030 D$ = CHR$(4)
10040 PRINT D$"OPEN TEST.RAN, L9"
10050 PRINT D$"READ TEST.RAN, R3, B5"
10060 INPUT A$
10070 PRINT A$
10080 PRINT D$"CLOSE TEST.RAN"
10999 VTAB 23
: PRINT "PRESS ANY KEY ";
: CALL - 756
: GOTO 10

11000 REM -----
11010 REM LISTING 4-11A
11020 REM -----

11030 BLANK$ = "
: REM 30 SPACES
11040 N1$ = "APPLE"
11050 N2$ = "COMPUTER"
11060 AD$ = "SILICON VALLEY"
11070 A$(1) = LEFT$(N2$ + BLANK$, 20) + LEFT$(N1$ +
BLANK$, 20) + LEFT$(AD$ + BLANK$, 30)
11080 PRINT A$(1)

12000 REM -----
12010 REM LISTING 4-11B
12020 REM -----

12030 PRINT
12040 N2$ = LEFT$(A$(1), 20)
12050 N1$ = MID$(A$(1), 21, 20)
12060 AD$ = RIGHT$(A$(1), 30)
12070 IF RIGHT$(N1$, 1) = " "
          THEN N1$ = LEFT$(N1$, LEN(N1$) - 1)
: GOTO 12070

```

Listing continued.

- The size of egg carton we need depends only on the number of marbles we want to store, not their size. A large marble or small marble (or no marble for that matter) take the same size cup. In a random file, all the records occupy the same disk space, even if the record contains no data.

- We can add or remove marbles in any order. We only need to know where the marble is stored. A random access file is so named because we can change one record without having to read or otherwise disturb other records.

Random File Commands

Random access text files share some commands with sequential files; the differences are subtle.

OPEN

FORMAT: PRINT D\$ "OPEN FILENAME, L40"

The OPEN command is similar to the command for sequential text files. However, you must specify the record length when reading random files (see "L" parameter, below). OPEN is mandatory for all random access text files.

CLOSE

FORMAT: PRINT D\$ "CLOSE FILENAME"

The CLOSE command is identical to the command for sequential text files. The file name is again optional if only one file is open or you want to close all open files.

Listing continued.

```

12080 IF RIGHT$(N2$, 1) = " "
      THEN N2$ = LEFT$(N2$, LEN(N2$) - 1)
      : GOTO 12080
12090 IF RIGHT$(AD$, 1) = " "
      THEN AD$ = LEFT$(AD$, LEN(AD$) - 1)
      : GOTO 12090
12100 PRINT N1$
      : PRINT N2$
      : PRINT AD$
12999 VTAB 23
      : PRINT "PRESS ANY KEY ";
      : CALL - 756
      : GOTO 10

13000 REM -----
13010 REM LISTING 4-12A
13020 REM -----

13030 N1$ = "APPLE"
13040 N2$ = "COMPUTER"
13050 AD$ = "SILICON VALLEY"
13060 A$(1) = N2$ + "#" + N1$ + "#" + AD$
13070 PRINT A$(1)

14000 REM -----
14010 REM LISTING 4-12B
14020 REM -----

14030 PRINT
14040 N1$ = ""
      : N2$ = ""
      : AD$ = ""
14050 L = LEN(A$(1))
14060 FOR I = 1 TO L
14070   A$ = MID$(A$(1), I, 1)
14080   IF A$ = "#"
      GOTO 14110
14090   N2$ = N2$ + A$
14100 NEXT I
14110 FOR J = I + 1 TO L
14120   A$ = MID$(A$(1), J, 1)
14130   IF A$ = "#"
      GOTO 14160
14140   N1$ = N1$ + A$
14150 NEXT J
14160 AD$ = RIGHT$(A$(1), L - J)
14170 PRINT N1$
      : PRINT N2$
      : PRINT AD$
14999 VTAB 23
      : PRINT "PRESS ANY KEY ";
      : CALL - 756
      : GOTO 10

```

Listing continued.

Circle 245 on Reader Service card.

NAME BRAND PRODUCTS DISCOUNT PRICES

PRINTERS

EPSON

**MANNESMANN
TALLY**

star
MICROBASIC-100

SCM SMITH
CORONA

OKIDATA

IIIKI

Transtar

TOSHIBA

EQUIPMENT

Hayes

**QUADRAM
CORPORATION**

AMDEK

RB ROBOT

Novation

FRANKLIN

SANYO

Verbatim

FREE UPON REQUEST
DISCOUNT PRICE LIST AND INFORMATION KIT

1-800-841-0860

Since 1978



**MicroManagement
Systems, Inc.**
2803 Thomasville Road East
Cairo, Georgia 31728

Save 44% off the newsstand price.

RUN

THESE COULD BE THE KEYS TO YOUR FUTURE

Unlock *all* the potential of your Commodore 64 and VIC-20* with **RUN**.

Explore... Experiment... Enjoy... Beginner and expert alike will be taken beyond the manual to the limits of their abilities. Enter your own game programs. Construct a simple hardware add-on. Broaden your scope with unique applications... And... get a 13th issue **FREE!**

Enjoy key features like these:

- Games for fun & strategy.
- Programming tips help you learn short cuts.
- Candid reviews help you make money-saving decisions.
- Programs to add to your library.
- Instructions & tutorials to increase your skills.
- Hardware & software modifications help your machine work smart.
- Unique applications broaden your scope.

Here's a system-specific magazine written with you in mind. Written by and for the reader to give time-saving, money-saving hints. You'll get instructions and tutorials to increase your skills, and candid reviews to help you make the right decisions. Most of all though, you'll have fun.



Commodore 64 and VIC-20 owners are one of the largest groups of computerists today. Enjoy the benefits of this with your own magazine. Be in control like never before. Order **RUN** today and get a 13th issue free with your prepaid order (check or credit card) of only \$19.97. Send in the coupon or call toll free 1-800-258-5473. In N.H. call 1-924-9471.

Send me a subscription to **RUN** for the regular subscription price of only \$19.97 per year. I understand that with payment enclosed or credit card order I will receive a **FREE** issue making a total of 13 issues for \$19.97.

☐ CHECK/MO ☐ MC ☐ AE ☐ VISA ☐ BILL ME

card # _____ exp. date _____

signature _____

name _____

address _____

city _____ state _____ zip _____

Canada & Mexico \$22.97; Foreign Surface \$39.97, 1 year only, US funds drawn on US bank. Foreign airmail, please inquire. Please allow 6 to 8 weeks for delivery.

RUN • Box 954 • Farmingdale, NY 11737

346F5

READ

FORMAT: PRINT D\$ "OPEN FILENAME, L300"

PRINT D\$ "READ FILENAME, R31"

The function of the READ command is similar to the command in sequential text files. The difference between the two READ commands is that, for sequential files, READ places the file pointer at the beginning of the file. In random files, READ places the file pointer at the beginning of the Rth record (the beginning of record 31 in the example above).

WRITE

FORMAT: PRINT D\$ "OPEN FILENAME, L20"

PRINT D\$ "WRITE FILENAME, R3"

The function of the WRITE command is similar to the command in sequential text files. However, you must specify the record number when writing to a random file (record 3 in our example above).

"L" Parameter

The "L" parameter is a necessary evil for random files. The "L" specifies record length. Since all records in a random file are the same length, the computer uses the "L" parameter to locate records on the disk. In effect, if you ask the computer to read the third record, DOS will count 2*L bytes, knowing that it is now at the beginning of the third record.

The "L" parameter must be in the range 1-32767. This means that we can build records far longer than those in the sequential files, which are limited to 255 characters.

The "L" parameter corresponds to the size of the cup in our analogous egg carton. The cup must be large enough to hold the largest marble; smaller marbles roll around with room to spare.

"R" Parameter

The "R" parameter in random files is not at all like the parameter in sequential files. In random files, the R stands for Record number, not Relative field. The "R" parameter is always measured from the beginning of the file, so it is an absolute position, not a relative.

The "R" parameter is what allowed

us to select a marble from any cup in our egg carton without disturbing other marbles. Think of the "R" parameter as the address of each record in a random access file.

"B" Parameter

FORMAT: PRINT D\$ "OPEN FILENAME, L9"

PRINT D\$ "READ FILENAME, R3, B0"

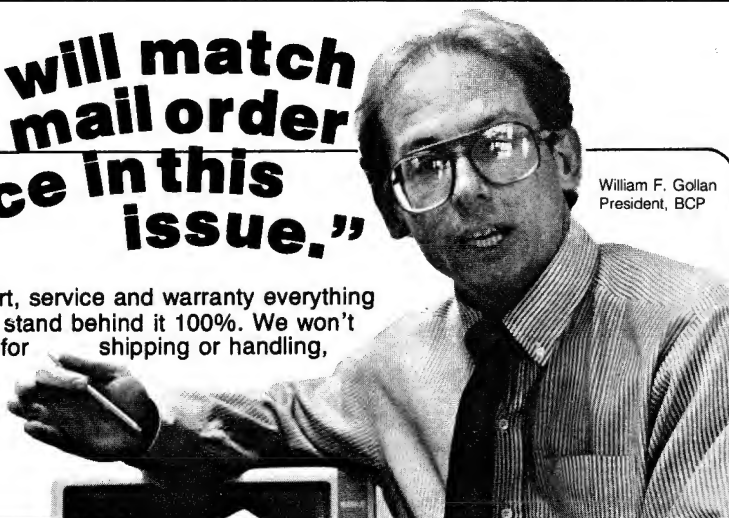
or PRINT D\$ "OPEN FILENAME, L9"

PRINT D\$ "WRITE FILENAME, R3, B0"

The "B" parameter in random files is also not quite like the parameter in sequential files. It does move the file pointer B bytes ahead, as it does in sequential files, but since the "B" parameter must be used with the "R" parameter, the position that DOS uses for reference is the beginning of the Rth record. Thus in random files, B is

"We will match any mail order price in this issue."

We'll support, service and warranty everything we sell and stand behind it 100%. We won't charge you for shipping or handling, nor will we penalize you for using a credit card.



William F. Golan
President, BCP

COMPUTERS				GRAPHIC INTERFACES & BUFFERS			
Franklin 1000	\$ 789.95	Apple IIE	call	w/16k & cable	179.95	Quadram 32k Fazer	179.95
Franklin 1200 OMS	1469.95			w/32k & cable	194.95	Quadram 64k Fazer	194.95
MONITORS				w/64k & cable	229.95	Quadram 128k Fazer	274.95
Amdek 300 A	\$159.95	Amdek Color III +	\$369.95	PRINTERS DOT MATRIX			
Amdek Color I +	299.95	USI Pi 3 12" A	159.95	C. ITOH 8510	\$ 379.95	Gemini Radix 15	\$ 699.95
Amdek Color II +	439.95	USI Pi 4 9" A	145.95	C. ITOH Hot Dot	499.95	Okidata 82A	339.95
MODEMS				Epson RX 80	319.95	Okidata 83A	559.95
Anchor Mk.	\$299.95	Hayes Smart 300	\$219.95	Epson RX 80 F/T	399.95	Okidata 84	959.95
Anchor Volks 300	69.95	Hayes Smart 1200	499.95	Epson RX 100	559.95	Okidata 92	439.95
Prometheus Pro 1200	389.95	Hayes Micro Ile ws	249.95	Epson FX 80	499.95	Okidata 93	699.95
PERIPHERAL CARDS & ACCESSORIES				Epson FX 100	689.95	Quadram QuadJet	759.95
ALS Z80 CP/M 2.2	\$124.95	Sprite II	\$199.95	Gemini 10x	289.95	Tally MT 160L	619.95
ALS Z80 CP/M 3.0	289.95	Supersprite	309.95	Gemini 15x	399.95	Tally MT 180L	809.95
East Side Wildcard 2	109.95	TG Joystick	45.95	Gemini Delta 10	459.95	Toshiba P1350	1599.95
Koala Graphic Pad	84.95	TG Paddles	29.95	Gemini Delta 15	559.95	Toshiba P1340	799.95
Kraft Joysticks	45.95	Titan Technologies		Gemini Radix 10	599.95	Transtar 315 Color	469.95
Kraft Paddles	29.95	Accellorator II/IIIE	429.95	PRINTERS LETTER QUALITY			
Microsoft		64k Ram II +	264.95	C. ITOH F10 40cps	\$1099.95	NEC 2030 20cps	\$809.95
Z80 CP/M Softcard	229.95	128k Ram II +	354.95	C. ITOH F10 55cps	1399.95	Silver Reed 500 14cps	419.95
Premium Pack II +	459.95	Neptune 64k + 80	199.95	Dynax DX 15 14cps	449.95	Silver Reed 550	529.95
Premium Pack Ile	339.95	Neptune 128k + 80	299.95	Daisywriter 33cps	999.95	Star PowerType	359.95
Synetix		Neptune 192k + 80	379.95	SOFTWARE			
Flashcard 144 kb	309.95	Videx Videoterm w/ss	229.95	Bank Street Writer	\$ 49.95	Flight Simulator II	\$ 39.95
Flashcard 288 kb	449.95	Videx Ultraterm	279.95	Bank Street Speller	49.95	Zork 1, 2 or 3	29.95
Sprite I	119.95	Videx Enhancer II	109.95	Home Word	39.95	Chopfliter	27.95
FLOPPY DRIVES				PFS Write	79.95	Sargon III	39.95
Adv. Micro 1/2 ht	\$219.95	Micro Sci A2 143kb	\$249.95	Sensible Speller IV	79.95	Lode Runner	27.95
Rana Elite I 163kb	279.95	Micro Sci A40 164kb	289.95	Screenwriter II	84.95	Millionaire	47.95
Rana Elite II 326kb	429.95	Micro Sci A70 286kb	349.95	Megawriter	74.95	PFS: File	79.95
Rana Elite III 652kb	539.95	HARD DISKS		Megaspell	44.95	PFS: Report	79.95
		Corvus 6m	\$1599.95	Dollars & Sense	79.95	PFS: Graph	79.95
		Corvus 20m	\$2939.95	Home Accountant	49.95	Multiplan DOS/CPM	179.95
		Corvus 11m	2199.95	Think Tank	109.95	dBASE II	399.95
GRAPHIC INTERFACES & BUFFERS				Math Blaster	39.95	Visicalc E	169.95
Fingerprint	\$119.95	Print-It	\$169.95	Word Attack	39.95	Versaform	249.95
Grappler +	135.95	PKASO/U & cable	135.95	Speed Reader II	49.95	Master Type	29.95

BC BUSINESS COMPUTERS
OF PETERBOROUGH

12 School Street • Peterborough, NH 03458

FREE
SHIPPING

MasterCard
VISA

ORDERS ONLY:
800-845-3003

QUESTIONS
603-924-9406

SEQUENTIAL RANDOM ACCESS

Access Method	FIFO	Any record
Size of Records	Variable	Fixed
Number of Records	Variable	Variable
Maximum Size of a Record	255	32767
Parameters to Open	None	L (=Length of Record)
End of Record Marker	CR	CR (ASCII = 13)
End of File Marker	00	00 (ASCII = 0)
Commands		
OPEN	Yes	Yes *
CLOSE	Yes	Yes
READ	Yes	Yes **
WRITE	Yes	Yes **
APPEND	Yes	No
POSITION	Yes	No
EXEC	Yes	No
"B" Parameter	Yes	Yes
"R" Parameter	See Text	Reqd
"L" Parameter	No	Reqd

* Requires "L" parameter

** Requires "R" parameter

Table. Summary of text file commands and characteristics.

the absolute position of a character in a specific record (the first byte of the third record in our example above).

Cautions

Using some of the fancier features of text files requires some special care.

When using the "B" parameter in either sequential or random files and writing to a file, be careful that you control the length of the data you are writing. DOS does not adjust the record length, so if the new data is shorter than the old, some extraneous data from the old record could be left. Likewise, if the new data is longer than the record length, the carriage return that marks the end of the record could be overwritten. DOS will lose its bearings when trying to read the file, with disastrous consequences. This is particularly true in random files where the carriage return marks the end of the valid data and the beginning of the zero fillers.

One of the major problems with random files is that, if you lose track of the value of the "L" parameter, there is no way to find its value short of a disk mapping utility. DOS will interpret the zero fillers in the first record as an end of file marker and issue an END OF DATA error on the first record. A good practice is to add the record length as part of the file name, e.g.: FILENAME (L=31).

Apple Computer apparently never anticipated that sequential text files would contain more than 32767 records. Above that number, the APPEND command does not correctly add new records. For a correction to this bug, see "Squashing a Nasty DOS Bug," in *All About DOS* by A.P.P.L.E.

Illustrating Random File Commands

Listings 7-10 illustrate random access file commands. Listings 7 and 8 create and read a sample random file, TEST.RAN, similar to the file TEST.SEQ. The "L" parameter (lines 7040 and 8040) is specified as 9 to correspond to the longest string that will be stored (i.e.: ABCXYZ123). In contrast to the sequential file, which required only one READ or WRITE command, the random file must call a

Circle 15 on Reader Service card.

"CATALOG"

with the flick of your little finger!

KEYFLEX™ another handy utility program from TROY SOFTWARE makes it possible.

Now you can type and even execute "CATALOG", "LIST", "CALL-151" and any other instruction or string of characters with just the flick of your finger. KEYFLEX™ does the rest.

Any key on the keyboard can be defined by you to print and even execute any command or instruction. Why not define the "C" key as "CATALOG" and maybe add "L" to "LIST" your program.

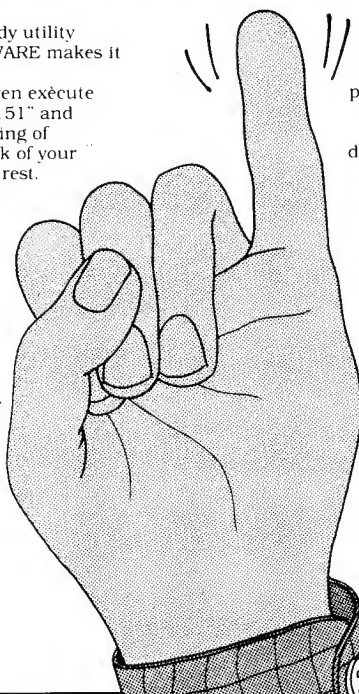
Contact your dealer or order direct.

(Visa and Master Charge orders accepted)

Please add \$2.50 for postage and handling.

TROY SOFTWARE DESIGN INC.
63 Roseview Avenue
Richmond Hill, Ontario
Canada L4C 1C6

☎ (416) 884-4527



Tired of typing all those "REM"s when writing your APPLESOFT programs? No problem, define it as "R". Any

BASIC command can be reduced to one key. All key definitions are easily stored in a table on disk, and even swapped with other tables on disk.

KEYFLEX™ is designed to work with APPLESOFT and ProDOS.*

Order today and let KEYFLEX™ handle your repetitive inputs and let your little finger do more than it ever did.

SPECIAL INTRODUCTORY OFFER

\$39⁹⁵

Please specify APPLE II or APPLE IIe.

* ProDOS requires 64K RAM and APPLESOFT in ROM. APPLE and ProDOS are registered trademarks of Apple Computers Inc.

LAST NAME	FIRST NAME	ADDRESS
COMPUTER	APPLE	SILICON VALLEY

Figure 5. Pattern of a blocked record.

READ or WRITE for each record (lines 7060 and 8060).

Listing 9 is a map of the text file. Since DOS cannot get a 00 without issuing an OUT OF DATA error, I have "fudged" zeros. The resulting map looks like Figure 4. This figure also shows a map of the way the file actually appears on disk.

As with the sequential file disk map above, all numbers are in hexadecimal and the MSB is high. Note two major differences between the two maps, however. The random file map contains all 00 for the first record. This is because random files always start counting at 0. Since we did not declare a 0th element, the string is null. Note also that the other records are padded with 00 to fill them out to nine characters. The extra zeros follow the carriage return, so when DOS reads the file, it does not detect the zeros, but they do occupy space on the disk. This is also why you cannot read a random file without knowing the length. DOS encounters the first 0 following the first record and interprets it as an end of file marker.

Listing 10 demonstrates the use of the "B" parameter with random files. Note that the "B" refers to a byte position within the called record, not an absolute position in the file, as was the case with the "B" parameter in sequential files. The table summarizes the text file commands and characteristics.

Organization of Data

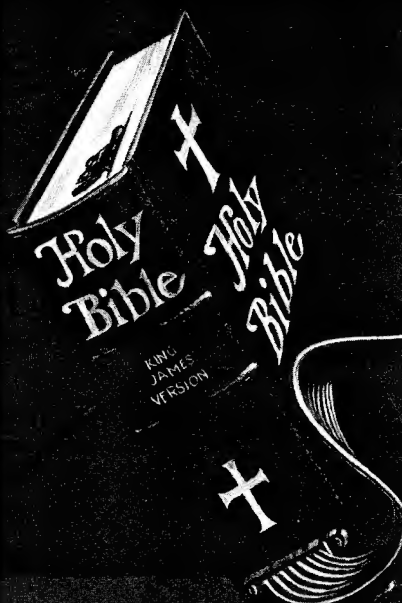
Organization of data is vital to the success of your program. In our file cabinet analogy, if we filed each letter in a separate folder, we would soon

have an incoming correspondence file little more useful than stuffing our letters in a desk drawer. Similarly, if we saved our names, addresses, telephone numbers, and whatever in our hypothetical program as separate records, we would soon have so many records to keep in order that we

would find it difficult to manage the data. Additional array variables would also quickly increase program overhead to the point that we would tax available memory. Generally, we combine the information we want to store into one record, making it easier to handle and generally requiring less

Circle 35 on Reader Service card.

New dimensions in Bible study.



THE WORD
processor
the complete KJV Bible on
disks **\$199.95 ***

TOPICS
an index to over 200 Scripture
subjects **\$49.95 ***
* plus \$3 postage/handling

For information contact:

Bible Research Systems
9415 Burnet, Suite 208
Austin, TX 78758
(512) 835-7981

"Software for personal Bible study."

Requires APPLE II + , IBM PC
and compatibles, TRS80,
CP/M 2.2 (Z-80), KAYPRO,
OSBORNE, COMMODORE 64,
Z-100.

LAST NAME#FIRST NAME#ADDRESS

COMPUTER#APPLE#SILICON VALLEY

Figure 6. Pattern of a delimited record.

overhead. The two ways to format several fields into one record are blocking and delimiting.

Blocking is nothing more complex than adding spaces (or other characters) to string values so that they become consistent in length and so that data fields lie at a consistent location in the string. Figure 5 illustrates a blocked record.

We may also choose to use a special character (delimiter) to mark the data fields in a record. The delimiter must, of course, be a unique character, one that will not appear in any strings. Control characters (ASCII 1-31) are

good candidates, but don't use CTRL-M because it will confuse DOS into thinking the end of the field is really the end of a record. Avoid commas and colons, since INPUT will truncate all characters after the comma/colon, when it reads a file from the disk. Figure 6 illustrates a delimited record.

Listings 11a and 11b provide algorithms for concatenating and dividing a blocked record. Listings 12a and 12b provide algorithms for concatenating and dividing a delimited record.

The blocked record lends itself well to random access files since the record length is consistent. The consistency of the location of data fields within the record makes use of the "B" parameter easy. Blocked records also have the advantage of being simple to divide into data elements, although this is less simple if your application requires removing the trailing blanks (lines 12070-12090).

The delimited record lends itself to sequential files since no extra disk or memory storage is required for unneeded blanks. However, the process of dividing the record into data fields creates a great deal of "garbage."

The process you choose will depend on your application, but a little thought at this point of program design will save you a lot of headaches later.

Further Reading

Chapters 6 and 8 of *The DOS Manual* discuss sequential and random access files respectively.

Now we can create and read two different types of text files. That ability is necessary before we can proceed to the next step, but hardly useful in

itself. Next month, we will examine ways of sorting all that data into some logical order. Text files are probably the most useful feature of the Apple, so I hope you aren't finding this whole subject sordid. ■

Addendum to Part 1

Part 1 of this series generated a lot of interest. I'd like to clarify some points raised by readers of the March *inCider*.

1. Yes, Figure 3 was labelled incorrectly. The last track is the 35th track, but since tracks are numbered beginning with zero, it should have read track 34. The same can be said for the reference to track 35 in column 3, p. 104.

2. Also, the 126K of disk storage cited on page 106, column 2, line 28 is calculated by 16 times 31 times 256. There are indeed 35 tracks or 143,360 (16 times 35 times 256) bytes of potential data storage, but DOS and the catalog remove four tracks from user access, leaving 31 tracks or 126K.

3. I have been asked why the 6 by 2 preinblizzing used by Apple DOS 3.3 for storing text results in a 342 byte data block rather than a 512 byte block. If we extrapolate the logic on page 106 of the March 1984 issue of *inCider*, it would seem that if DOS took each byte of data and stored six bits in one place and two bits in another, it would indeed take 512 bytes (256 times 2) to store a block of data.

The 342 byte block used by DOS is divided into two sections, one 256 bytes long and the other 86 bytes long. Each storage byte in the first block contains the major six bits from one data byte. Each storage byte in the second block contains the minor two bits, but stored in groups of three pairs. So DOS fills each of the 342 bytes with six bits each. The size of the 86 byte block is determined by common arithmetic: It takes 86 bytes to store 256 pairs of bits at three pairs per byte. The first 256 storage bytes contain bits from the same data byte; the second 86 storage bytes contain six bits from three different data bytes each. The data block looks like Figure 7.

I'm sorry if my original (incomplete) explanation confused you, but I was trying to simplify things.

```
OOXXXXXX      ^
OOYYYYYY      |
OOZZZZZZ      |
...           |
OOJJJJJJ      |
OOKKKKKK      | 256
OOLLLLLL      | byte
...           | block
OOAAAAAA      |
OOBBBBBB      |
OOCCCCCC      |
...           |
OOCLLLZZ      | 86 byte block
OOBBKKYY      |
OOAAJJXX      |
```

Figure 7. The DOS data block.

Calendar

May 31-June 2
**Southern Educational
 Computer Conference**
 Atlanta, GA
 contact:
 NECOL
 PO Box 792
 Torrington, CT 06790
 (203) 489-2728

June 1-3
**Computer Country
 Fair & Exposition**
 Stratham, NH
 contact:
 Julianne Cooper
 41 Front St.
 Exeter, NH 03833
 (603) 778-0344

June 8-10
**Kansas Computer
 Exhibition**
 Wichita, KS
 contact:
 Ron Holmes
 PO Box 47186
 Wichita, KS 67201
 (316) 269-1022

June 12-14
Info/Software
 Chicago, IL
 contact:
 Clapp & Poliak
 708 Third Ave.
 New York, NY 10017

June 12-15
**Understanding
 Microprocessor-Based
 Equipment and
 Troubleshooting Seminar**
 Minneapolis, MN
 contact:
 B.J. Green
 Micro Systems Institute
 Garnett, KS 66032
 (913) 898-6152

June 13-15
PC-World Exposition
 Chicago, IL
 contact:
 Paula Belikove
 Mitch Hall Associates
 PO Box 860
 Westwood, MA 02090
 (617) 329-8090

June 13-15
**National Educational
 Computing Conference**
 Dayton, OH
 contact:
 Lawrence A. Jehn
 Computer Science Dept.
 University of Dayton
 Dayton, OH 45469
 (513) 229-3831

June 14-17
Byte Computer Show
 Los Angeles, CA
 contact:
 Peter B. Young
 The Interface Group
 300 First Ave.
 Needham, MA 02194
 (800) 325-3330

June 15-16
**SYBEX Computer
 Pioneer Days**
 San Francisco, CA
 contact:
 Suzanne Beauregard
 SYBEX
 2344 Sixth St.
 Berkeley, CA 94710
 (800) 227-2346

June 17-20
**Assoc. for Small Computer
 Users in Education
 Conference**
 Bowling Green, KY
 contact:
 Dr. Dudley Bryant
 Western Kentucky
 University
 Bowling Green, KY 42101
 (502) 745-0111

June 21-22
**Microcomputers in
 Education and Training**
 Boston, MA
 contact:
 Raymond G. Fox/SALT
 50 Culpepper St.
 Warrenton, VA 22186
 (703) 347-0055

June 21-23
**Great Southern
 Computer Show**
 Jacksonville, FL
 contact:
 Great Southern
 Computer Shows
 PO Box 655
 Jacksonville, FL 32201
 (904) 356-1044

June 23-25
**National Conference
 on Computers in
 Medical Practices**
 San Francisco, CA
 contact:
 Marie Kelly
 MEDCOM 84
 1803 Golden Gate
 San Francisco, CA 94115

June 26-29
**Government
 Computer EXPO**
 Washington, DC
 contact:
 Douglas C. Brooks
 GCE 84
 1620 Elton Road
 Silver Spring, MD 20903
 (301) 445-4400

July 9-12
**1984 National Computer
 Conference**
 Las Vegas, NV
 contact:
 Russell K. Brown
 AFIPS
 PO Box 9658
 Arlington, VA 22209
 (703) 558-3680

July 23-27
SIGGRAPH '84
 Minneapolis, MN
 contact:
 Gerri Salvatore
 111 East Wacker Drive
 Chicago, IL 60601
 (312) 644-6610

July 26-27
**Summer Computer
 Simulation Conference**
 Boston, MA
 contact:
 Society for Computer
 Simulation
 PO Box 2228
 La Jolla, CA 92038
 (800) 225-7654

August 1-3
**The Computer: Extension
 of the Human Mind**
 Eugene, OR
 contact:
 Summer Conference
 Office
 College of Education
 University of Oregon
 Eugene, OR 97403
 (503) 686-3460

August 2-4
**Great Southern
 Computer Show**
 Charlotte, NC
 contact:
 Great Southern
 Computer Shows
 PO Box 655
 Jacksonville, FL 32201
 (904) 356-1044

August 21-24
**International Conference
 on Parallel Processing**
 Bellaire, MI
 contact:
 IEEE Computer Society
 PO Box 639
 Silver Spring, MD 20901

Bent on Business

by Gregory R. Glau



Breakin' It Down

One of the most difficult aspects of any selling situation is exactly *how* you explain your price to your prospect. There must be just the right blend of benefits that s/he can expect to receive in relation to the cost of what you're selling.

For anyone who handles big-ticket items, this can be an acute problem because the dollar amounts are so high. When you start throwing huge figures at your prospects, the first thing they do is to focus on the total price, often to the exclusion of all the benefits you've been talking about. It's only natural to do this; the last time you looked at a new car, what was the first figure you read on its price sticker? Right—the total.

Once you got over the initial shock of the listed price, you probably at least scanned the rest of the sticker, which tells not only the base or starting price, but also what all the extras cost. You can see exactly what you'd pay (if you bought this car) for air conditioning, cruise control, power windows, and so on.

You still might not be convinced—the total may still seem too high—but at least you might understand where the price came from. You may even start to think that, well, once you add up all the extras (that you'd really want, if it came down to it), the total price isn't really out of line.

Breaking Things Down

One thing that can help your sales of expensive items is to use a spreadsheet program on your Apple to create a *bid breakdown* to detail what you're selling, much like that

sticker on the new car. The idea is to give your prospect a list of each item that makes up the total price of what you're trying to sell, so s/he will understand where your cost comes from and how many things enter into it. It's one thing to tell a prospect that the air conditioning system you propose will cost \$3,000, and quite another to present a full page of prices, that of course add up to that same \$3,000 figure, but none of which—individually—seem out of line.

There's another benefit to creating a detailed list of what you sell. Many of us work on a bid basis—we present written estimates for the work we propose to do. To arrive at that estimate, we usually make a cost

breakdown, a list of what all of our expected costs will be for each job.

Instead of doing this with paper and pencil, why not use your spreadsheet program so you can take advantage of its math power? It can total a column of figures much more quickly and accurately than you can by hand. Then take things a step further and create a detailed bid breakdown for each job, on a retail level. You present this, along with your written estimate, to your prospect, so s/he can see how you arrived at the total price for the job.

Gregory R. Glau breaks it all down for you at PO Box 1627, Prescott, AZ 86302.

A2	(L)	COST		C!
				17
	A	B	C	D
1				
2	COST	ITEM		
3				
4	165.11	FURNACE		
5	37.11	VENT		
6	241.11	DUCTWORK		
7	75.00	GRILLS		
8	150.00	WIRING		
9	82.50	GAS PIPE		
10	350.00	LABOR		
11				
12				
13	1100.83	TOTAL		
14				
15				
16				
17				
18				
19				
20				

Figure 1. A VisiCalc worksheet that shows the cost prices for a furnace installation.

"When you sell a job you can recall and print out your cost sheet and have a list of materials for the work."

Figure 1 illustrates a simple cost breakdown sheet for a furnace installation. This example is done with VisiCalc, but if you used another spreadsheet it would look much the same. The materials are listed along with their estimated costs. The cost total is also shown. This is what you'd use internally to calculate your total anticipated expenses for a job.

Organization

This picture might seem backwards, as we'd usually have the item description in column A and the cost to its right, in column B. However, it's necessary to do things this way, as it makes it easy to figure, show and print the retail prices.

Figure 2 takes things a step further and asks the spreadsheet program to add column C, which calculates and displays the retail prices for the items. In this case, the cost prices in column A are divided by .64. This puts a 36 percent markup on the cost amounts ($100 - 64 = 36$). All figures are shown formatted on a dollars and cents basis.

Finally, Figure 3 is the retail bid breakdown you'd print and present to your prospect. Since you can ask your spreadsheet program to print just a section of your worksheet, you instruct it to print cells B2-C13 to create this breakdown sheet. Now (hopefully) your prospect will appreciate all of the different elements that make up the price of this job, and won't focus just on the total cost. It's probably a good idea to add a few words of explanation along the top of any printout you give your prospect, to let him/her know this is a detailed breakdown of the job you propose, to thank him/her for letting you present your estimate, and so on.

One other plus this method brings to your business is that if you save

each of these little worksheets on disk, when you sell a job you can recall and print out your cost sheet and have a list of materials for the work (just print columns A and B). It's an instant ordering sheet. It also tells you what total costs you can expect to incur for a particular job, and exactly what materials should be used—something you can compare to the actual materials your people end up using.

An added benefit of all this is that when you're going over your worksheet with your prospect, it gives him/her a chance to say, "Hey, let's skip this one part of the job for now, and we'll add it later on, when we've paid for the rest of the work." Often in our own business we get people who want to do some of the work, and this breakdown shows them exactly what they'll save if they take on part of the project themselves.

While these illustrations show a simple worksheet, the concept is what's important: to show your prospect what each individual item costs

A2	(L)	COST		C!
				17
	A	B	C	D
1				
2	COST	ITEM	RETAIL	
3				
4	165.11	FURNACE	257.98	
5	37.11	VENT	57.98	
6	241.11	DUCTWORK	376.73	
7	75.00	GRILLS	117.19	
8	150.00	WIRING	234.38	
9	82.50	GAS PIPE	128.91	
10	350.00	LABOR	546.88	
11				
12				
13	1100.83	TOTAL	1720.05	
14				
15				
16				
17				
18				
19				
20				

Figure 2. A worksheet done on VisiCalc that shows both the cost and the retail prices of a furnace installation.

ITEM	RETAIL
FURNACE	257.98
VENT	57.98
DUCTWORK	376.73
GRILLS	117.19
WIRING	234.38
GAS PIPE	128.91
LABOR	546.88
TOTAL	1720.05

Figure 3. The final printout that details the retail price breakdown for a furnace installation.

to help him/her understand why what you're proposing costs what it does. Few major items are sold today without a number of component parts that combine to form a significant dollar total. Once your prospect sees where all the costs come from—and that they're each a necessary part of the work—s/he's more likely to buy. ■

by Bill O'Brien

The Apple III—Great Company!

When computer historians look back at today, to trace the origins of their own modern-day machines, and they have compiled all the facts, one computer will probably stand out. With none of the bias that sometimes tinges the considerations of our contemporaries, they will see that it was the precursor of almost all that, in that future time, currently exists.

Analyzing, for that is the way of computerists, they will note that it was the first computer to employ a standard memory configuration larger than an 8-bit processor could normally support. They will enumerate its video outputs: composite color, RGB color, and two composite black-and-whites. They will catalog its other output capabilities: serial RS-232, dual analog joystick, one thermal printer, four disk drives, and audio. They will delight in its display capabilities, with six graphics memory pages to fill, text included; they will laud its preeminence as one of the first computers to use color and still handle text in 80 columns; and they will wonder at its delicious variety of character sets.

They will marvel that all of this was contained in one machine with no additional boards, bangles or beads. *And that machine is the Apple III.*

Now, you might consider this just a fantasy of some sort, but let's examine the facts. The Apple III is an *abstract* computer. There is no ROM (read only memory) to direct its actions. All that the machine is, it becomes when RAM (random access memory) is loaded. If the disk you place in the internal drive contains Pascal, then the III is a Pascal computer. With Forth or Fortran or Co-

bol, it could be any of those things as well.

The way the Apple III handles output is, perhaps, the role model for all operating systems to come. If you want to print to the screen, you open a pathway there and do it. When you change your mind and want to output to the printer, just rename the pathway. And it works the same for the disks, for the modem, or for anything else. Each pathway, or logical device driver, controls the physical device to which it leads. If the characteristics of the device change, you simply modify the driver to reflect the differences. There is no need to alter hundreds of lines of code.

You can dedicate the Apple III to a single occupation or have it perform multiple functions. One company, Haba Systems, has an Apple III doing database work while, *at the same time*, it monitors the phone line, recording the length of a call and calculating its cost. It will even dial the call.

SOS

The Apple III's Sophisticated Operating System, SOS, is another achievement. Its ability to handle many directory levels is a feature found on larger, more expensive machines. Added to the IBM PC, it's called a system of "pipes" with directory "trees" and proclaimed Unix-like and evolutionary. On the Apple III it's just a convenience that offers root directories to which you can attach other, more specific directories that further refine your ability to catalog and handle information.

Even Apple's own Macintosh and Lisa, for all the windows, desktops and mice, are only Apple IIIs dressed

up to go out. Once you get inside the windows and look around, you find folders with files in them and a way to print through something called an Imagewriter file. It's the next step in the evolution of the SOS INTERP, KERNEL and DRIVER files—and that's all it is.

Of course, there are now 16-bit and 32-bit processors that, supposedly, make 8-bit machines like the Apple III obsolete—but they do the same things. They are faster at actual calculations, but that only accounts for about one third of the computer's time. You print it, you store it to disk, or you send it over the phone lines; any computer attached to the same device will be limited by the speed of that device.

From this point on, if someone gives you a hard time about your Apple III, ask them if their computer can do simultaneous foreground and background tasks. Ask them how many boards they had to add before they could see what they were doing, either on a screen or on a printer. Ask them, also, how long it took them to get comfortable with their keyboard, and how many times a day they still grouse at it. Best of all, try and find out why the company that manufactures a computer that is supposedly a modern and highly efficient tool for information processing only compares it to the Apple II.

I've become somewhat intimate with the Macintosh for a project I'm doing, and am cognizant of the PC for various and sundry reasons. They're good—I'd be lying to you if I

Send your correspondence to Bill O'Brien at his new address, PO Box 1010A, Fort Lee, NJ 07024.

UNDERWARE

Software that's priced UNDER the competitions'

APPLE PROFESSIONAL

CONTINENTAL

Just for You!

General Ledger	\$157
Accounts Receivable	\$157
Accounts Payable	\$157
Payroll	\$157
Property Management	\$349
Home Accounting	\$47
First Class Mail	\$60

MICROPRO

WordStar	\$289
InfoStar	\$289
ReptStar	\$259
ProPack (WordStar, Mail Mge., Spellstr., StarIndex)	\$389

GREAT SAVINGS ON

Monogram Dollars & Sense	\$77
TeleLearning University	\$119
CompuServe Start Kit 5 hrs.	\$29
MSI Programmable Spreadsheet	\$69
Sierra HomeWord	\$49

APPLE EDUCATION

SPINNAKER

KidWriter ages 5-12	\$23
Delta Drawing ages 4-up	\$37
Alphabet Zoo ages 3-8	\$23
Hey Diddle ages 3-10	\$23
KinderComp ages 3-8	\$23
Rhymes & Riddles ages 5-9	\$23
Story Machine ages 5-9	\$26
Search Amazing Thing ages 10-up	\$29
Snooper Troops 1 ages 10-up	\$33
Snooper Troops 2 ages 10-up	\$33
Fraction Fever ages 7-up	\$23

CBS SOFTWARE

Success with Math Series	
Addition-Subtraction	\$19
Multiplication-Division	\$19
Linear Equations	\$19
Quadratic Equations	\$19
Mastering the SAT	\$99

SCOTT FORESMAN

For You!

Probe Primary	\$29
Probe Intermediate	\$29
Probe Jr. H.S.	\$29
Probe H.S.-adult	\$29

DESIGNWARE

Spellagraph	\$29
Trap A Zoid	\$29
Creature Creator	\$29
Spellicopter	\$29

APPLE ENTERTAINMENT

Hayden Sargon 2	\$27
Hayden Sargon 3	\$37
Epyx Temple Apshai	\$28
Epyx Jumpman	\$25
Epyx Oil Barons	\$39
Sega Star Trek	\$33
Sega Buck Rogers	\$33
Sega Congo Bongo	\$33
SubLogic Flight Simulator	\$37
InfoCom Zork 1, 2, 3	each \$26

PERIPHERALS

DISK DRIVES

RANA Elite 1	\$249
RANA Elite 2	\$385
RANA Elite 3	\$495
Controller with above	\$77

MODEMS

NOVATION

Smart Cat 103-212 1200	\$415
J-Cat	\$109
212 Apple Cat (1200 baud)	\$549

Apple Cat II (300 baud)
\$209

ANCHOR MODEMS

For You!

With Power & Cable	
Mark 7 300 baud	\$129
Mark 12 300-1200 baud	\$289
Volksmodem 300 baud	\$79

PRINTERS

NEC 8023A	\$379
NEC 8025	\$669
STAR GEMINI 10X	\$287
Okidata 82A	\$389
Okidata 83A	\$589
Transtar 1315 Color	\$489

BOARDS & BUFFERS

PRACTICAL PERIPHERALS

Printerface	\$59
GraphiCard	\$79
MicroBuffer II+ 16K	\$189
MicroBuffer II+ 32K	\$219

said they weren't. But what you've got is just as good, and in some ways a lot better. And the Apple III is going to stay one of the best machines on the market for the next few years.

A Crossroads

Unfortunately, while it's true that the Apple III is an evolutionary machine, it's also true that less is being done with it than with the Apple II series. As a columnist, I have reached the point where I have related just about all I know that will be of help to my readers.

inCider, too, senses the lack of broad interest in the III. As part of an editorial stocktaking, and because the "well is running dry," so to speak, we have decided to discontinue the "III's Company" column as is. I will

"The Apple III is going to stay one of the best machines on the market for the next few years."

be trying on new boots with a column, "O'Brien's Journal," focusing on how the business and professional person with an Apple II can best apply the computer products on the market to his or her own situation.

We are not, however, abandoning our Apple III readers. I and the magazine will continue to address Apple III issues on an inquiry basis. Write in with your questions and I'll answer them in the Letters department. Or, if a significant enough issue comes up, I'll do an article on it.

Those of you who have written before, keep writing, and those who have not—now's the time. I'll look forward to hearing from you. Meanwhile, remember—we have a great machine. Be proud of it!

Live long and program. Aloha, AppleAmerica! ■



\$uch A Deal

12629 N. Tatum Blvd.
Suite 138
Phoenix, AZ 85032

CALL TOLL FREE 1-800-431-8697/602-957-3619

For Customer Service Call: 602-955-3857

ORDERING & TERMS: Send cashier check, money order, personal/company checks allow 3 weeks bank clearance VISA/MasterCard accepted. Provide phone number with order. SHIPPING: add \$4.00 for first three pieces, add \$1.00 each additional piece. Hardware add \$10.00. Returns must have authorization number (call 602-957-3619 for authorization number). All returned merchandise subject to restocking fee and must come with all original packaging. No returns allowed after 30 days from shipping date. Prices are for cash, VISA and MasterCard add 3%. Prices subject to change without notice. All products subject to availability from manufacturers and/or suppliers. All prices in U.S. dollars.



The Apple Clinic

by Earle Hancock

•Double Seven Loses •Printer Code Blues •Sound Off

I have an Apple II Plus with 48K, a language card, a Grappler card, an Apple dot matrix printer, two disk drives, an Apple Monitor III, and a Taxan RGB color monitor. The language card, Grappler card, disk card, and Taxan RGB II card are in slot 0, slot 1, slot 6, and slot 7 respectively. I recently bought the Supersprite card and software from Synetix Inc. However, the Supersprite card goes in the same slot as the RGB II card. I've tried the RGB II card in the other slots and it doesn't work. What can I do? I'm not afraid to modify the hardware.

F. Mahon
Lakeworth, FL

Unfortunately, both the RGB monitor and the Supersprite card require the composite sync and color burst video signals available only in slot 7. The sync signal regulates the horizontal and vertical scans of the electron beam in the monitor, keeping them in correct timing with one another. The monitor uses the presence of the color burst to determine whether an incoming signal is a color or a non-color signal.

Even if it were possible for the two cards to somehow share slot 7, the power requirements of the Supersprite card (350 milli-amps) are such that an overload of the Apple's supply might occur if many other cards were in the system with the Supersprite card. See the December *Apple Clinic* for more on peripheral card power consumption.

Many thanks to the technical support staff at Synetix for their help.

I hope you can help me with this

problem, since it seems that no one else can (On-Line, SSM, and Leading Edge). I have an Apple II Plus, Microsoft 16K, SSM APPIC/G parallel card, 8510 Prowriter parallel, and On-Line Screenwriter word processor.

None of the embedded commands in the Screenwriter do what they are supposed to do. They end up being printed out on the paper rather than directing the print copy. On-Line sent me a list of replacement commands for underlining and a few other operations, leaving 90% of the Screenwriter useless to me. I bought it to write footnotes and so on. At present, I get straight print out of it, which is OK, but not for research papers and other uses which I bought it for. If you or any of your readers can help, please do.

E.J. Lima Jr.
Narragansett, RI

It sounds like the printer is expecting certain control codes that Screenwriter is not sending. Each printer company (and sometimes different printers from the same company) uses its own set of codes to control print size, vertical spacing, underlining, bold print, emphasized print, superscripts and subscripts, and other functions. Usually, the word processing software offers a way to change the codes so they match your printer.

I have never used and do not own Screenwriter, but a call to the Sierra On-Line product support group got me on the right track. They have eight technicians on call from 9 a.m. - 5 p.m. Pacific time, Monday through Friday. You can call them with your questions and problems at (209) 683-6858.

So, what did I find out? Well, you're correct in assuming that only a few printer codes are specifically outlined by Screenwriter. They are underline and boldface. Other printer codes are identified in the same manner, but you must do some legwork to get at them.

The codes are usually escape sequences—a small list of symbols starting off with an ESC (escape). Since letters, numbers and other symbols in a computer have a numerical value called ASCII code, we will use those numbers. The ASCII code for ESC is 27. For Screenwriter's purposes add 128 to the normal ASCII value—ESC is 155.

To use the printer codes in Screenwriter they must be defined or declared (not unlike Pascal) before they are used. The best place for the codes is at the beginning of each file. Once defined, the codes can be saved in an otherwise empty file ready for the next document. Just load the "empty" file and start to write.

Here is an example of the definition of condensed print. Type .RE #155—the .RE stands for replacement, delta () stands for space, # stands for ESC and 155 is the ASCII value for ESC (27 + 128, remember?). Then type .RE @209 (81 + 128) for condensed on and .RE %206 (78 + 128)

Earle Hancock has directed the microcomputer project at Minuteman Regional Vocational School, Lexington, MA, for three years. He has served as an advisor to the Massachusetts Association of Vocational Administrators, and is an active member of the Boston Computer Society and other computer organizations. Address correspondence to him c/o incider, Pine St., Peterborough, NH 03458.

"I wonder how many automobiles would be sold if we had to rebuild the carburetor to change brands of gasoline."

for condensed off. Other codes are constructed in a similar manner. To use this declaration in your writing, type #@ where you want condensed print to begin and #% where it is to stop. See your Screenwriter manual for further details.

If this explanation sounds a bit esoteric, remember that there is a price for being first. Three or four years from now a question like this will be (or had better be) unnecessary. I wonder how many automobiles would be sold if we had to rebuild the carburetor to change brands of gasoline.

I have not been able to find out how to connect the AUDIO IN section of the COLOR-I PLUS to my Apple IIe. I would like to control the sound, up and down. Is this possible? What must I do? If this can't be done, what are the alternatives? Thanks for your interesting column!

L. Motherwell
Atascadero, CA

Because one pin of the Apple speaker output is connected to five volts, the output is unsuitable for connection to most audio inputs with an audio amplifier, like the audio input on your Amdek Color 1.

In my classroom, the sound of seven to ten Apples all playing the music accompanying Lemonade drove me to design an external speaker with a volume control (read potentiometer). I connected the external speaker to the Apple speaker output, and was able to turn down the volume so that barely any sound came from the speaker. When I wanted to listen to music on the computer, the external speaker was louder and produced better quality sound. Best of all, the whole project cost less than \$30.

All you need to make your own volume controlled speaker is a speaker (Radio Shack has several to choose from under \$25), a 1000 ohm potentiometer, and some wire.

To disconnect the Apple speaker, pull up gently on the Molex connector, removing it from the posts on the Apple motherboard. Coil up the Apple speaker wire and secure it with

tape to the inside of the case, out of the way. Don't remove the Apple speaker—you may want it someday.

Connect one wire to each of the two speaker connections on the motherboard. I use small insulated alligator clips for this. Pass the wire out the back of the computer, providing a strain relief so an accidental tug won't dislodge the alligator clips from the posts.

Find a good place for the volume control. You may want it in the speaker or placed separately. Some

may wish to drill a hole in the side of the computer and mount the control there (the wire from the motherboard speaker connection would first go to the volume control before exiting the back of the computer, if the control is so placed). I will assume that the control will be mounted in the speaker housing.

One wire from the motherboard goes to a connector on the volume control. Another wire connects the other side of the volume control to the speaker (this is called connecting in series). The third wire goes directly from the motherboard connector to the speaker and *voila!* The sound is controlled.

This column depends on you. If you have any hardware problems, please write me. I enjoy hearing from all of you. See you next month! ■

Business as Usual?

Business as usual these days means a computer that's up and "humming." But if your computer were stolen or damaged, you wouldn't have business as usual.

YOU'D HAVE TROUBLE!

You can get fast replacement for your entire system and be back in business in a hurry by protecting your computer with SAFEWARE Personal Computer Insurance. It's the only coverage designed specifically for personal computers used for business — in your office, shop or home.

SAFEWARE protects ALL hardware, ALL purchased software and ALL media against theft, damage or any other kind of loss, regardless of use, after a low \$50 deductible.

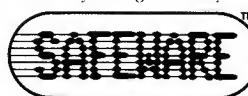
(Not without your computer it wouldn't be.)

Fast, courteous claims handling prevents your losing valuable business computing time.

Find the premium price for the coverage you need listed in the table below, available for as low as \$35 per year. Fill in the coupon today. Your coverage will begin as soon as your coupon application is received. Or for even faster coverage, call our toll free number:

1-800-848-3469

(In Ohio call 1-614/262-0559)
Phones open 8 a.m. to 8 p.m.,
Monday through Saturday



Total Hardware, Media & Software System Value	Annual Premium
Up to \$ 2,000	\$ 35
\$ 2,001-\$ 5,000	\$ 60
\$ 5,001-\$ 8,000	\$ 75
\$ 8,001-\$11,000	\$ 90
\$11,001-\$14,000	\$105

Call toll-free for rates on higher coverage.
Coverage differs in Texas.
It is an underwriting requirement that you insure your system for its full value.

IC

Mail to: SAFEWARE, P.O. Box 02211, Columbus, OH 43202.

Before I'm out of business,

please issue my SAFEWARE Insurance Coverage.

Name _____

Street _____

City _____ State _____ Zip _____

System value \$ _____ ☐ Check Enclosed ☐ VISA ☐ MasterCard

Card # _____ Exp. Date _____

Beating Fre (0) with HIMEM

by Paul P. Dymerski

The Apple's most frustrating feature when working with strings is the garbage collection routine. The routine is in the Apple's ROM memory, and is automatically called by the Apple monitor when string storage is nearly full. This could happen during program operation at inconvenient times. The operating program disappears for several seconds, leaving the user wondering how he or she "killed" the computer.

Things get worse if you move DOS into the 16K language card, as I discovered when I attempted to fit more than 1000 one-word strings into memory. To my surprise, when I ran the finished program the monitor called the garbage collection routine and disappeared for over one minute.

I looked at several alternatives to this annoying problem. These were:

- 1) Disable the garbage collection routine.
- 2) Modify the routine.
- 3) Replace the garbage collection routine with a faster one.
- 4) Give up.

The first two solutions will not work, since GARBAG at \$E484 is in ROM (read only memory), as is the calling routine. ROM cannot be patched as RAM can. (That's why you can't patch the Apple II to get upper- and lowercase.)

The third option offers faster housekeeping routines. Randy Wiggington, in the January 1981 issue of *Call A.P.P.L.E.*, presents a quick, compact, machine language clean-up routine that is faster than the ROM routine. This routine, how-

ever, takes up space I could not afford to give away. The program still disappears for several seconds because it scans memory from the top of graphics page two (LOMEM for my program), to memory location 48000. My program has to call this routine on every pass to keep the ROM routine from jumping into the act.

One possible shortcut checks free space on every pass of the program for needed housekeeping:

```
2001 IF PEEK(112)*256 + PEEK(111) - (PEEK(110)*256 - PEEK(109)) < 2000 THEN CALL 768
```

This is cumbersome and, if the space (2000 bytes) is set too small, the monitor GARBAG routine occasionally acts first for a one minute delay.

The Solution

Rather than opt for the last alternative and give up, I played with LOMEM and HIMEM. Since I loaded strings into memory which wouldn't be changed during program execution, I loaded these strings into memory, and then set HIMEM just below the bottom of the strings. It was worth a try. Do it this way:

- 1) Load a string memory array into memory.
- 2) Check the bottom of strings by `?PEEK(112)*256 + PEEK(111)`.
- 3) Set HIMEM to this value with `HIMEM:.`
- 4) Try to print the first element in the strings you entered.

You lost your strings! The reason: HIMEM is a short ROM routine that performs several functions and moves

the top of string memory pointers. In the process, HIMEM clears all strings. Poke the values into the HIMEM locations (115, 116). This will trick the garbage collection routine into thinking HIMEM is lower than it is.

Repeat steps 1 and 2 above, or better yet, for step 2 try:

- 2) `POKE 115,PEEK(111); POKE 116,PEEK(112)`

This places the memory location of the bottom of your string array into the HIMEM pointer locations. Try to print the first string element.

- 3) `?A$(1)`
`HELLO`

Voila! It's still there. Will the ROM garbage collection routine accept this as HIMEM? Enter:

- 4) `?X FRE(0)`

For the clean-up routine, try step 3 again to see if the strings are still intact. Surprised? It works.

If your program initializes a group of strings on start-up that you'll read but never change during program operation, load this first. Move the HIMEM pointer to the bottom of this string area. Let the garbage collection go on its way.

Remember, if you try to change a string in your protected area, the monitor relocates the string position below the new HIMEM. Your original string is lost. You may, however, add more strings to the top of the array. ■

Paul Dymerski is head of the research staff at International Software Systems, PO Box 5427, Richmond, VA 23220.

BLOAD Spec-Finder

by Jeff Creamer

Here is the best BLOAD spec-finder ever published, to my knowledge, in any Apple magazine. It's a one-line EXEC file that you create with your word processor; it gives you the address and length of the last BLOADED file in both hex and decimal. Best of all, it accomplishes this without disturbing your Applesoft program or any machine-code routines in memory—low-impact programming that is also worry-free.

Any word processor that creates text files can be used to enter the BLOAD Finder (Applewriter IIe, for instance, will do just fine). If your word processor doesn't have this capability, you can also use a good text file editor such as the Editor-Assembler provided in the DOS Toolkit. Just type in the program as shown in the program listing, being careful not to include any stray blanks or carriage returns. This single line weighs in at 239 characters, which is the limit for a legal line of Applesoft. (Actually, you could add one more character, since the final double-quote mark is not necessary.)

Any number of lines can be entered into an EXEC file. Everything is packed into one line here to get the nicest possible printed output. This way no Applesoft or Integer Basic prompts will spoil the neatness of the resulting display.

When you enter the EXEC file, save it as LAST BLOAD. Your BLOAD statistics are now easily found by the following procedure: First, BLOAD any binary file of interest. Then type: EXEC LAST BLOAD. After a very short interval, the address and length of the file you loaded will appear on the screen.

You may recognize the ? symbols in the program listing as Applesoft equivalents to print statements. Use of this symbol allows you to pack more onto one line. The CALL -372

statement accesses a part of the GO routine in the Apple Monitor at \$FEB9. This routine loads the 6502 registers with the contents of the monitor's pseudo-register bank at \$45-\$48, then does an indirect jump to the routine whose address is stored in locations \$3A-\$3B (the pseudo-program-counter).

In this case, the pokes to locations 58 and 59 point the indirect jump to location \$F941. This is what starts the hexadecimal conversion. It is the beginning of the PRNTAX routine, which prints the contents of the A and X registers in hexadecimal. The

```
HOME:A=-21902;L=-21920;POKE58,65;
POKE59,249;AH=PEEK(A+1);AL=PEEK(A
);LH=PEEK(L+1);LL=PEEK(L);VTAB2:?
"BLOAD STATS":?"ADDRESS: ";AH*256
+AL;" ($";:POKE69,AH;POKE70,AL;CA
LL-327:?"");?"LENGTH: ";LH*256+LL
;" ($";:POKE69,LH;POKE70,LL;CALL-
327:?"")
```

Program listing. EXEC file that prints address and length of last BLOADED file in both hex and decimal.

other peeks and pokes calculate the decimal lengths and addresses by a standard method.

I have found the LAST BLOAD routine especially handy in my work with Apple shape tables, and in deciphering old routines that I entered using the monitor before I got my assembler. ■

You can write to Jeff Creamer at 704 Maricopa Drive, Prescott, AZ 86301.

Circle 264 on Reader Service card.

BACK UP YOUR DISKS

EDD is the most powerful disk duplicator available for your Apple™ computer. Unlike the copycards, which only copy single load programs, EDD backs up more your entire disk. EDD can back up more protected software than all other copy programs or copycards put together. Since EDD is automatic, you will no longer have to change parameters to duplicate most disks, although every parameter is fully documented in our extensive manual. We also provide up-dated EDD program lists.

\$79⁹⁵

Plus \$2 postage
(Overseas \$5)
CA residents
add 6%

Runs on: 48K Apple II,
II plus, IIe, or III (emu-
lation mode) with 1 or 2,
3.3 drives

ESSENTIAL DATA DUPLICATOR III™

- EDD rarely needs parameter changing
- Automatically finds the beginning of each track
- Unlike any of the Copycards, EDD backs up the entire disk, not just what is in memory
- Accurately finds "auto-sync" bytes and their lengths
- Can copy 1/4 and 3/4 tracks

TO ORDER OR FOR MORE INFORMATION, CALL (707) 257-2420

UTILICO MICROWARE

3377 Solano Ave., Suite 352, Napa, CA 94558

Nearly Nine Million Computer-Involved People Around the World Rely on Our Publications For the News They Need.



We're CW Communications/Inc.; the world's largest publisher of computer-related newspapers and magazines. And wherever you go in the computer world, you'll find computer-involved professionals reading—and relying on—our publications. With highly trained and experienced editorial staffs all over the world, our publications give readers the best and most up-to-date information available in this rapidly changing industry.

Around the world:

We publish, co-publish or provide editorial services to the leading computer publications in the world, including publications in all of the following countries:

Scandinavia—Denmark, Sweden, Norway, Finland

Western Europe—West Germany, United Kingdom, France, Italy, Spain, Greece, the Netherlands.

The Mid-East—Kuwait, Saudi Arabia.

Asia/Africa—People's Republic of China,

Korea, Japan, Singapore, Southeast Asia, South Africa, India.

The Southern Pacific—Australia.

Central and South America—Mexico, Brazil, Argentina, Chile.

In the United States:

In the world's largest computer market, we publish a whole series of publications that cover different aspects of the industry. Our largest publication, with more than half-a-million readers every week, is *Computerworld*, a weekly newspaper aimed primarily at larger computer users. Its companion publications include *Computerworld Office Automation*, *Computerworld on Communications* and a series of *Buyer's Guides* covering all major segments of the industry.

In addition, we publish *MICRO MARKETWORLD* for dealers, distributors, retailers and others involved in the microcomputer marketplace. For microcomputer users, we publish

Infoworld, *Microcomputing*, *PC World*, *MacWorld*, *jr*, *80 Micro*, *inCider*, *Rum*, and *Hot CoCo*.

No one in the world publishes more computer information for more people in more countries than we do. And we'd be happy to give you more information on any of our publications. Just send a telex to our U.S. offices, attention CW International Marketing Services, (telex #95-1153) or write us at the address below.



CW COMMUNICATIONS/INC.

375 Cochituate Road, Box 880, Framingham, MA 01701
(617) 879-0700

Book Reviews

Apple II Applications

by Marvin L. De Jong

Howard W. Sams & Co. Inc.

4300 W. 62nd St.

Indianapolis, IN 46268

Softcover, \$13.95

The Apple II computer gets much of its versatility from its easy connections to the outside world. Most personal computers drive a monitor, a printer, and one or more disk drives and that's it. With the Apple and its eight 50-pin peripheral interface slots, this easy adaptability makes the Apple II into a word processor with 80-column display, a precision laboratory real-time monitor and controller or any number of devices. But, many Apple owners lack the knowledge necessary to take advantage of the computer's versatility. *Apple II Applications* helps fill that need.

"This book shows how you can use the Apple II to make measurements of physical quantities, to control other devices, and to communicate with other computers," the author states in his preface. He continues: "The goal of this book is not only to show that measurement, control, and communications applications are interesting and fun, but also to give you the necessary skills to create and solve your own applications problems." The book easily achieves these goals.

Chapter one, on serial communications and information transfer between computers, begins with a brief discussion of input/output fundamentals, and follows with the best explanation of asynchronous serial communications I have seen in computer hobbyist literature. Applications discussed include interface to an acoustic-coupled modem and communication via telephone lines using a Hayes direct-connect modem.

Another chapter explores some of the possibilities offered by the Apple's game connector port, which offers four built-in analog inputs, three one-bit inputs, and four one-bit outputs, all easily accessible to the user.

This chapter shows how to measure light intensity and temperature using photoresistors, phototransistors and thermistors with those same inputs.

In the third chapter the author discusses various non-volatile memory devices at the beginning, then devotes the bulk of the chapter to the particulars of programming a 2716 EPROM using a commercial programmer.

Digital-to-analog and analog-to-digital conversion are the subjects of the next two chapters. Each begins with a discussion of the fundamentals, then follows with an explanation of the hardware used in the applications that follow.

The final chapter, Timing and Counting, contains a concise explanation of the two timer/counters in the 6522 VIA, some applications and uses for the Mountain Computer clock interface board in timing and counting.

Each chapter begins with a brief statement of purpose and content, then ends with a list of reading for further information and study. Applications are accompanied by several program listings, in both Basic and assembly language, relevant to the topic presented.

Two appendices are concerned with machine language fundamentals and a programming reference to the features of the 6522 VIA.

The book contains numerous charts, tables and diagrams with genuinely useful information. Program listings are well-structured and documented with REM statements.

All of this material has been covered before. What is unique is that the material is gathered all in one place, and it is well presented. There are, after all, only so many ways you can connect a computer to the world, and that is the purpose of this book.

This is easily the best book for users with little or no interfacing or hardware construction experience. The interface cards required are all commercial, readily-available units and are reasonably priced. Little or no test equipment is required for the applications described. Most of the

required components can be purchased at Radio Shack and mail-order suppliers.

This book is intended for both beginners and experienced users, and its approach to the material displays it. Topics are covered assuming no prior knowledge or experience on the part of the user. The coverage is such, however, that even the experienced user will find it useful as a concise summary of the most important components of the topics explored.

Apple II Applications is one of the Blacksburg Continuing Education Series of educational texts. Consistent with the rest of the Blacksburg series, it is at least as hardware-oriented as software-oriented. If you like to pop the top off your Apple and plug things into it, you will enjoy this book. ■

F. Kuechmann
Vancouver, WA

Learning with Logo

by Daniel Watt

McGraw-Hill Company

1221 Avenue of the Americas

New York, NY 10020

Softcover, \$19.95

Learning with Logo by Daniel Watt is well-written, liberally illustrated with excellent turtle graphics and cute cartoon characters—the turtle, the Logo wizard and Logo's robot helpers. These characters focus attention on specific detail in the presentations, emphasizing pitfalls, powerful ideas, explorations and helpful hints.

Consistent with computer programming style, the book starts out with chapter 0, which tells us about the book, who it's intended for, what it's intended to do and how to use it. Each chapter contains a general introduction to its contents. Explanations and procedures are clear and well stated; each major concept is clarified by exposing possible errors that may be encountered in using the procedures. Explorations and power-

ful ideas with the examples guide and extend the learner's capability. Throughout the book, helper's hints, in smaller type, summarize and clarify information being presented.

Learning with Logo was written for the Terrapin and Krell versions of Logo, but the activities explained in the book can be used with Apple Logo and TI Logo also. Slight differ-

ences between the three versions of Logo are explained in the appendix.

I like the appendix list of Logo commands discussed in the book. Appendix IV gives a quick reference guide listing the command, its short form where applicable, the page reference for further explanation and a one-line example of the syntax of the command. This is very useful—often

when writing procedures I cannot recall whether I should use the [] or the (), the : or " delimiters.

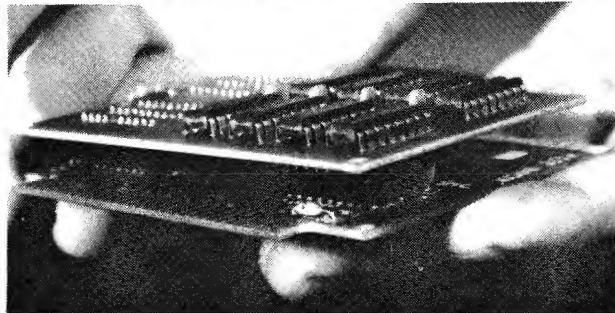
Learning with Logo is over 350 spiral bound pages (it folds back flat on the cluttered computer table) packed with excellent information about the Logo language, written in easy to read, easy to understand English. Containing many wonderful ideas, the book will educate, entertain, and challenge the reader for many hours.

If you are learning the Logo language, buy this book. Daniel Watt and his cartoonist Paul Trap are to be congratulated on an excellent reference manual. ■

A.E. Doughty
Edmonton, Alta.

DON'T THROW AWAY YOUR MONEY!

TRANSFORM YOUR APPLE 80 COLUMN CARD INTO THE "EXTENDED 64K VERSION" ONE



YEAR

WARRANTY

*If you are not satisfied
you may return within
ten days for a Full
Refund.
(Shipping not included)*

- ✓ Extend 80 plugs into your standard 80 column card to make your Apple / le* a 128K system.
- ✓ Extend 80 offers Total Compatibility.
- ✓ Extend 80 is a quality, thoroughly tested product.
- ✓ Extend 80 sells for just \$129.95 +
- ✓ Extend 80 offers double resolution graphics capability.
- ✓ Extend 80 can be used while programming under Apple computer's Pro Dos.

* Apple / le is a trademark of Apple Computer, Inc.
+ Add \$3.00 for shipping (\$10.00 outside the U.S.)
- Payment in U.S. dollars only)



— DEALER INQUIRIES WELCOME —

I want Extend 80 for just \$129.95 +

☐ Mastercard ☐ Visa ☐ Check, M.O.
(FL residents add 5% sales tax)

Name _____ Tel. # _____

(ALLOW 10 DAYS FOR PERSONAL CHECKS)

Address _____

City _____ State _____ Zip _____

If you prefer ask your Local Dealer to order Extend 80 for you.

Signature _____ Date _____

Charge Card # _____ Exp. Date _____

MANUFACTURED BY: **CARIBBEAN COMPUTER SALES, INC.**
221 EAST OSCEOLA - SUITE 110
STUART, FL 33494 (305) 287-3336

The Apple House

by John Blankenship

Prentice-Hall Inc.

Englewood Cliffs, NJ 07632

Paperback, \$14.95

One of the big selling points for personal computers has been the potential for handling routine chores around the house. While most applications have centered around things that you can do at home, Blankenship's *Apple II* literally handles chores directly connected with his house. *The Apple House* is subtitled "How to Computerize Your Home Using Your Apple Computer." The book describes in some detail the system that the author has actually running in his own home. Home security, lighting, heat control, and telephone management are a few of the areas covered in this book.

Like other personal computer owners, I read advertisements and articles describing home control applications. Most of the information published did little to explain exactly how to integrate my home and Apple.

The book is organized for easy readability. The first few chapters provide an introduction and overview of the system and its compo-

nents. Chapters 4-12 describe each of the hardware items in greater detail. The software for each of the modules is described in chapters 13-20. Installation, maintenance, expansions and enhancements are covered in the last two chapters. Appendices provide actual program listings and sources of products.

Blankenship outlines five major goals for the system described:

- Use of off-the-shelf equipment wherever possible.
- Easy installation.
- Easy expansion and customization.
- Some degree of cost effectiveness for frills contained in the system, such as voice recognition and speech synthesis.
- User-friendliness and helpfulness.

The home control system has five basic functions organized in a modular fashion:

- The *voice request module* uses wireless microphones to allow the user to talk to the computer and access submodules that control house lighting, provide time status, turn on the security system, place phone calls, and so forth.
- The *phone control module* serves as an intelligent answering machine. Provisions are included for obtaining status information and home control from a remote location.
- A *security management module* provides monitoring of movement both inside and outside the home. Appropriate action is taken depending on the circumstances at the time.
- *Event timing* establishes a pattern of anticipated activity according to entries in event tables and represents a specific action to be taken when time and conditions are correct for it to occur.
- *Internal movement* is monitored by another module to keep track of where people are in the house.

Another module, although not labelled as such, is described in Chapter 7. A simple fail-safe system must be included in any type of home control application. In this one, a software counter is running continuously. When the system programs are functioning properly, the counter is

reset to zero periodically. If the counter reaches a predetermined figure it means that one or more of the modules are malfunctioning and the entire system reboots. While this approach to making programs fail-safe is hardly revolutionary, it is simple and effective.

The final chapter offers a few ideas for enhancing any computerized home system—watering grass, adding smoke alarms to the security system, controlling garage door openers, monitoring doorbells, and whatever else you can think up.

Flowcharts, schematics and illustrations visually illustrate the ideas being discussed. The programs listed are well documented by the text and REM statements.

There are some inherent problems in describing specific hardware for an application such as this. As pointed out in Chapter 4, the Heuristics Speech Link used is no longer available. Other hardware described will just as certainly become unavailable or substantially changed. The author recognizes this fact and offers suggestions for using other pieces of hardware.

The Apple House is a well organized and well written book. The author avoids as much technical jargon as possible while still providing accurate information. This is no beginner's tutorial, however, since a fair knowledge of both Basic and electronics is presumed at the outset. Blankenship notes (rather accurately, I suspect) that "few, if any individuals are going to run out and buy a microcomputer system just to control their home. It is much more likely that this book is being read by someone who already has a computer and is looking for a new and novel way of using it."

I was somewhat disappointed by the lack of information regarding part-time use of the Apple II for home control. It appears the author's system is devoted to home control on a full-time basis. That may be fine for him, but I use mine for other things. While designing a system to work part-time may not be substantially different from that described, some

SELECT SOFTWARE, INC.

ALL the software you need at 30% OFF

For Your Convenience:

ORDER TOLL FREE

24 Hours a Day 7 Days a Week

NATIONAL:

1-800-732-2666

NEW YORK STATE:

1-800-441-4442

SPEEDY SERVICE

\$3.00 shipping and handling charge for ANY SIZE ORDER. New York State residents add appropriate sales tax.

NO EXTRA CHARGE for MasterCard or Visa



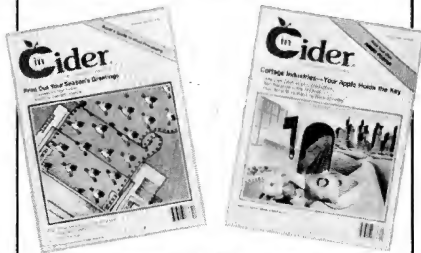
Allow 2 weeks for personal and business checks to clear before shipping.

WRITE FOR **FREE** PRICE LIST

SELECT SOFTWARE, INC.

P.O. Box 86
Buffalo, N.Y. 14226

BACK issues



January 1983 to present
Single back issue \$3.50
Add \$1.00 per magazine for shipping
10 or more back issues add \$7.50 per
order for shipping.
inCider Back Issue Order Dept.
80 Pine Street
Peterborough, NH 03458

**This Publication
is available in Microform.**

**University Microfilms
International**

300 North Zeeb Road, Dept. P.R., Ann Arbor, Mi. 48106

ATTENTION

Foreign Computer Stores/ Magazine Dealers

You have a large technical audience that speaks English and is in need of the kind of microcomputer information that The Wayne Green Publications Group provides.

Provide your audience with the magazine they need and make money at the same time. For details on selling **Microcomputing**, **80 MICRO**, **inCider**, **HOT CoCo**, **RUN, jr** and **Wayne Green Books** contact:

**SANDRA JOSEPH
WORLD WIDE MEDIA
386 PARK AVE., SOUTH
NEW YORK, NY 10016
PHONE (212) 686-1520
TELEX—620430**

functions would need modification for such use. Suggestions for such modifications would be a valuable addition to this book.

If you have any interest in using your computer for home control, I can heartily recommend this book. *The Apple House* describes a well integrated and operational system in such a way that the reader should have little difficulty understanding how a computer can be used for such an application. Armed with this understanding, computer owners are in a better position to decide whether or not to let theirs become the "first Apple House on the block." ■

Leslie R. Schmeltz
Bettendorf, IA

The Apple II Circuit Description

by Winston D. Gayler

Howard W. Sams & Co. Inc.
4300 W. 62nd St.
Indianapolis, IN 46268
Softcover, \$22.95

If you ever want a book that covers the main logic of an Apple II from revision 0 to the latest RFI revision D or a schematic of the older type keyboard or the newer two-piece type, this book has eight chapters that give you a detailed circuit description of the Apple II with timing diagrams and schematics. It is not a cookbook, I/O interface or 6502 experiment book. It is an expanded *Apple II Reference Manual* to provide information for your specific application.

Chapter one gives some idea of what you should be familiar with, such as binary and hex number systems, TTL gates, flip-flops, registers, multiplexers and a basic knowledge of microprocessor and microcomputer architecture. This chapter also helps you determine the revision of your Apple and the differences between each revision. It defines the jargon that will be used throughout the book and has a glossary of terms

at the end.

Chapter two uses a block diagram to give a brief overview of the Apple II.

Chapter three starts the detailed explanation of the Apple II. In this chapter the clock generator and horizontal timing are discussed. At the end of this and the following chapters, the signals discussed are summarized.

The fourth chapter is about the video timing—vertical, horizontal, blanking, synchronization, color burst and composite video. If you are not familiar with any of these terms, Appendix A helps you understand some basics about television.

The Apple II uses the 4116 dynamic RAM, which needs refreshing to keep the data from being lost. The video display circuitry refreshes the memory in the Apple II, so a separate refresh circuit is not needed. In chapter five, this is explained in detail, along with Apple's multiplexing technique, a separate memory read and write timing example, and how the different video screens are displayed.

Chapter six gives a short overview of the different pins on the 6502. It also deals with the systems bus, address decoding, direct memory access, daisy chains, keyboard and peripheral access, the different interrupts and RAM/ROM access.

Chapter seven is about the on-board input/output: the cassette I/O, the game port, the speaker and an extensive section on the keyboard. The chapter also involves the cassette port, the speaker, game switches and game paddles. The author provides you with a few calculations that show you what to expect from the circuit and shows some wave forms for better understanding.

The video display is what helps sell so many Apples. In chapter eight you will find extensive information on where the different screens are located in memory, how the colors are produced, and (in great detail) the operation of each type of screen the Apple can display (text, lo-res, hi-res and mixed mode).

Book Reviews

The last half of the book contains appendices. Appendix A explains the basics of television. Appendix B describes the motherboard and keyboard circuit changes that have taken place since Apple II's initial design. Appendix C discusses the schematics and the symbols used. Appendix D is a list of references for each of the chapters and appendices. The rest of the book is schematics, block and timing diagrams for revisions 0 through RFI revision D, and the one- and two-piece keyboards.

The nicest thing about this book is that each of the schematics and diagrams fold out for full view while you

are reading the book. My only disappointment is that you have to unfold the schematic or diagram you want to look at to find the figure number. Since this ruined my concentration, I marked the figure number in the upper right corner of each folded schematic and diagram. This made it much easier and quicker to locate any figure that I was referred to.

This book is well worth the money if you are interested in building any peripherals, modifying the Apple or just getting a better picture of how your Apple ticks. ■

Kenneth McMillen
Merritt Island, FL

inSidious inSolubles Solutions, from page 51

Solution to Text File (Listing 1):

Two things wrong here. First, because of a glitch in Apple DOS, you should always follow a GET statement with a PRINT statement or the next DOS command will not be executed. Second, there is an unwanted semicolon in line 100 after the first N\$.

If you inserted the PRINT statement and ran the program before you removed the semicolon, you will have ended up with a file called "NAMES.TXTREAD NAMES.TXT" on your disk. If you tried to delete this file you would have received a FILE NOT FOUND message.

```
90 GET A$: PRINT
100 PRINT D$; OPEN "IN$: PRINT D
$1" READ "IN$
```

With the semicolon in line 100, there is a control-D in this unwanted file's name, just before the R. Do you understand why?

Solution to Hi-Res Viewer (Listing 2):

Before running this program you may want to BLOAD a picture on page 1 or 2. Use BLOAD (binary file name), A8192 or BLOAD (binary file name), A16384. All of the POKEs in lines 100, 140, 150, and 160 have to do with selecting the various Apple text and graphic modes. The POKE -16304,0 missing in line 140 sets the graphic display mode.

```
140 POKE -16304,0: POKE -162
97,0: POKE -16302,0
```

Circle 360 on Reader Service card.

PUT YOUR APPLE II TO WORK FOR YOU:

STOCK-FOLIO™

Manages Stock Price & Volume Data and your Portfolio Buy, Sell, Short, Cover, Dividend, and Cash Account Records. No Modem. Efficient Keyboard Data Entry. Only \$79.50 Complete. **FREE** Brochure.

Call or Write.

MICRO PROGRAM DESIGNS

5440 Crestline Road, Wilmington, DE 19808
Phone: 302-738-3798

Circle 318 on Reader Service card.

CALL OR WRITE TODAY!

Elephant Disks
SS/DD... \$16.95
SS/DD... 19.95
DS/DD... 25.95

Verbatim
SS/DD... \$22.95
DS/DD... 32.95
Head Cleaning Kit... 5.95

**CALL & YOU'LL BE CONVINCED
LIKE THOUSANDS OF OTHERS...
WE'VE GOT THE BEST PRICES ON
HARDWARE & SOFTWARE!**

Alpha Plot	\$24.95	Delta Drawing	\$34.95
Apple Mechanic	19.95	Face Maker	24.95
Beagle Bag	19.95	Hey Diddle Diddle	20.95
Beagle BASIC	23.95	Kinder Comp	20.95
DiskQuick	19.95	Rhymes & Riddles	20.95
DOS Boss	15.95	Snooper Troops	29.95
Double Take	22.95	Story Machine	24.95
Flex Type	19.95	Most Amaz. Thing	26.95
Frame-Up	19.95	Trains	27.95
GPLE	32.95	Cubit	29.95
Pronto DOS	19.95	Drol	24.95
Silicon Salad	16.95	Flight Simulator II	36.95
Tip Disk #1	13.95	Lode Runner	23.95
Typefaces	13.95	Maze Craze	27.95
Utility City	19.95	Cosmic Balance	27.95
Ultima III	39.95	S.E.U.I.S.	27.95
Caverns of Callisto	22.95	Germany 1985	41.95
Zork I, II, or III ea.	24.95	Geopolitique 1990	27.95
Starcross	24.95	Eagles	27.95
Deadline	32.95	Fortress	24.95
Suspended	32.95	Sammy Lightfoot	20.95
Witness	32.95	Stellar 7	22.95
Planetfall	32.95	Castle Wolfen.	20.95
Enchanter	32.95	Millionaire	41.95
Infidel	32.95	Cross Word Magic	34.95
PFS: File	79.95	Chopfliter	24.95
PFS: Report	79.95	Zaxxon	25.95
PFS: Graph	79.95	Miner 2049er	25.95
PFS: Write	79.95	Learning w/Leeper	24.95
Bounc. Kamungas	13.95	Sargon III	34.95
Coveted Mirror	13.95	Titan Empire	24.95
Mini Man	13.95	Home Accountant	47.95
Quest	13.95	The Accountant	99.95
Transylvania	13.95	VersaForm	248.95
Graphics Magician	38.95	Dollars & Sense	69.95
Chivalry	34.95	VisiCalc 3.3	146.95
Old Ironsides	27.95	MultiPlan	169.95
Sticky Bear ABC	26.95	Incredible Jack	124.95
Shapes	26.95	MasterType	27.95
Opposites	26.95	Bank Street Writer	43.95
Basket Bounce	26.95	Homework	46.95
BOP	26.95	Screen Writer II	81.95
Numbers	26.95	Zardax	154.95
Hard Hat Mack	26.95	Magic Window II	93.95
Axis Assassin	26.95	Sensible Speller	78.95
Last Gladiator	26.95	Visible 6502	39.95
One-On-One	29.95	Micro Cookbook	27.95
Standing Stones	29.95	Fontrix	52.95
Pinball Construct.	29.95	Ess. Data Dup.	48.95
Music Construct.	29.95	Copt II Plus	23.95
Cut & Paste	37.95	Locksmith 5.0	73.95
Wizardry	32.95	Mailing List	34.95
Knight of Dia.	22.95	FCM	65.95
Legacy of Lylga.	26.95	CompuServe Pack	29.95
Crypt of Medea	24.95	ThinkTank	104.95
ALPSIM-3	35.95	Wildcard	79.95
Spitfire Simulator	31.95	Wildcard 2	104.95
Aztec	27.95	Datalife Analyzer	24.95
Crypto Cube	27.95	Zoom Grafix	32.95
Flip Out	19.95	ASC II Profess.	85.95
Repton	26.95	Mockinboard	149.95
Time Zone	69.95	Koala Pad	84.95
Star Blazer	22.95	Gemini 10X	279.95
Aerobics	31.95	Flip-N-File	19.95
Alphabet Zoo	20.95	Dynax DX-15	444.95

Personal checks allow 2 weeks. We accept Visa & MasterCard (add 3% for handling). Send or call with card no. & exp. date. Include \$3.00 for shipping (printers & monitors \$10.00). Ohio residents add 5 1/2% state sales tax. Prices are subject to change without notice.

FAS-TRACK
COMPUTER PRODUCTS

5360 N. High Street
Columbus, OH 43214
(614) 863-1699

OR TOLL-FREE OUTSIDE OHIO
1-800-272-1600

Hardware Reviews

Juki 6100 Printer

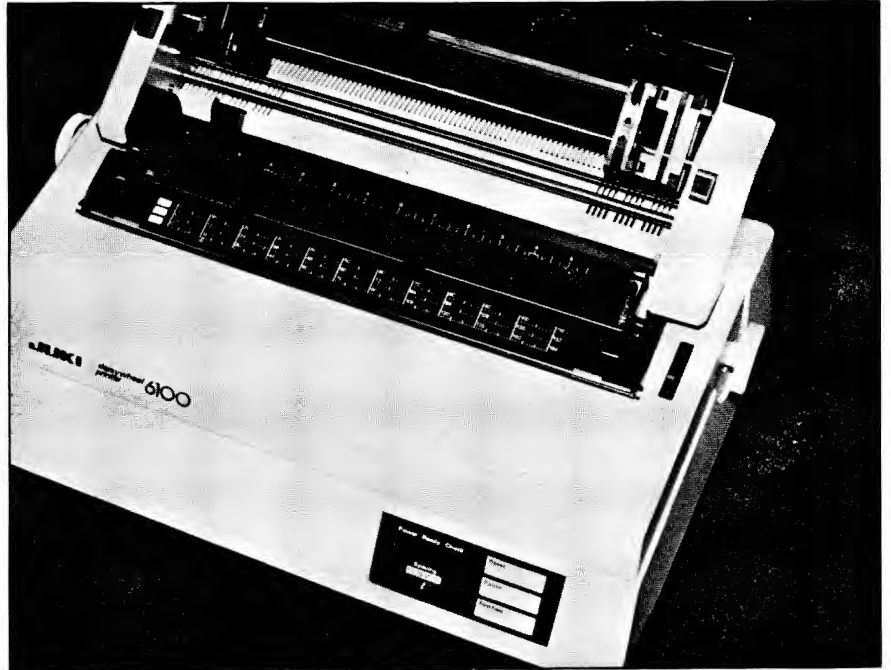
After making do with a no-frills dot-matrix printer for several years, the need for better print-quality resumes, business letters, and other formal documents led me to the Juki Model 6100—a low-priced, little-advertised Japanese import.

Using a bi-directional, logic-seeking print mechanism, the Juki 6100 churns out crisp copy at up to 18 characters per second. Its carriage is 13 inches wide, and it will print an 11-inch line—well over 132 columns at narrow pitches. Four pitches can be selected by computer control or by a switch on the front panel: 10, 12, 15, and proportional spacing. You can select odd pitches, such as 20 or 11, by computer control only. (Of course, you have to be careful not to use too narrow a pitch for your print wheel.)

The printer uses a 100-character, plastic print wheel that contains all ASCII characters needed for printing Basic program listings. It also accepts Triumph-Adler print wheels. The TA wheels have a slightly different character set, and come in script, italic, and optical character recognition. The Juki uses the IBM Selectric II ribbon, either single-strike or multi-strike.

The standard paper-handling system is friction feed; a tractor-feed unit is optional. The printer's front panel has touch-sensitive membrane switches for pause, reset, and form feed. Three front panel LEDs indicate power-on, ready-to-print, and check, which lights to alert of an error or a normal pause. The power switch is at the left rear, as on the Apple II. A Centronics parallel interface is standard; an RS-232 serial interface is available as an option. The printer weighs about 28 pounds, and is not terribly bulky.

The Juki 6100's daisy wheel is mounted in a drop-in mechanism for fast, easy insertion and removal; pull one lever, drop in the wheel, push back the lever, and the wheel is



The Juki Model 6100 with optional tractor-feed mechanism installed.

mounted and centered. This feature makes it easy to vary print styles within a document—just pause the printer, insert a new wheel, and pick up where you left off.

Another feature lets you advance individual sheets of paper to a one-inch top margin by activating the pause control and then pulling back the paper bail lever as you insert the sheet. A built-in 2K print buffer can expand to 8K by adding three more 2K chips.

The noise level of the Juki is lower than that of other daisy wheel machines (nominally, 63 db A at a one-meter distance), and with the clear plastic acoustic cover in place over the platen and a foam rubber pad under the unit, the sound level is not disturbing. The bi-directional printing doesn't miss a character. Even when you pause the printer to change paper or ribbon, the printing picks up where it left off, once you press the reset switch.

The special printing features meet my expectations. You can control underlining, boldface, shadow printing (a heavy boldface), superscripts, and subscripts by sending escape se-

quences to the printer. For example, escape-E turns on underlining, and escape-R turns it off. I don't have any difficulty using these features with Screenwriter II, because of the program's ability to embed control characters (and escape sequences) in the text. Underlining and boldface are printed using the standard features of Screenwriter II; the Juki behaves similarly to the Diablo 630 for configuring word-processing software. There are some variations, though, and you should check the printer with the configuration you'll be using before you make a purchase.

One slight inconvenience arises when you use the six special characters on the 100-character print wheel. You have to use escape sequences, either from the keyboard or from software, to produce these symbols. They cannot be printed by using the CHR\$ Applesoft function. The six characters vary according to the settings of three DIP switches. These settings let you set the Juki for different language print wheels, but also cause the special characters to vary for the wheel of any one country. For example, using the Juki wheel for the

United States, an escape-J produces an umlaut, a superscript 3, or an accent mark. To complicate matters, the Triumph-Adler print wheels have a different character set from the Juki wheels.

On the positive side, the Juki's documentation is excellent. The manual has 164 pages with illustrations and tables. The writing is concise, taking pains to explain the major procedures and technical matters. The book covers the procedures for interfacing with the Apple II, IBM PC, Kaypro, Osborne, and TRS-80 Model III, and the set-up sequence for using WordStar. There is one nice bonus for Apple II users—the manual includes listings of three Applesoft programs that show off the Juki's features, including graphics.

I recommend the Juki 6100 for those who need true letter-quality printing. The price is low, the speed is adequate for home use, and the ease of operation is excellent. The printer offers the special features you would expect in this price range. The only caveat I would offer is to make sure your word-processing software can handle escape sequences if you need to print the six special characters on the print wheel, or if you need to access printer-control functions with embedded commands.

For further information, contact Juki Industries of America, Inc., 299 Market Street, Saddle Brook, NJ 07662. List price is \$699. ■

Alexander S. White
Annandale, VA

Smith-Corona L-1000 Printer

You get a warm, secure feeling inside when you use a typewriter-quality printer made by a longtime American typewriter manufacturer. Smith-Corona's L-1000 is the result of a marriage between the electric typewriter and the microchip. It's not as fast or as fancy as more expensive daisy wheel printers, but it performs well enough with the



The Smith-Corona L-1000.

quality and simplicity that will keep it working for a long time.

The L-1000 produces letter-quality printing admirably. Character evenness and alignment are excellent, and the mechanism handles paper smoothly. You can pay more for a daisy printer, but you won't get better looking output.

Of course, there are no laws saying how fast a letter-quality printer has to do its job, or how quietly. Daisy printers are slow and noisy. The L-1000 is among the slowest. It's rated at 12 cps (characters per second) and takes about three minutes to print a full page of double-spaced 80-character lines. Faster daisy printers finish the task in one third the time, but they also cost more.

This printer is not any noisier than the average daisy, though its sound is a bit different from the faster ones that have a low, rattling vibration. At 40 or 50 cps, you can't hear individual hammer taps. The L-1000 sounds like an electric typewriter; you hear each tap.

The Mechanics

The paper feeding mechanism is a standard rubber platen. Just like a typewriter, a spring-loaded paper bail with three adjustable rollers holds the paper against the platen above the printing head. A sliding metal ear, marked for 8½ and 11 inches, guides the left edge of the paper as you roll it in. (Maximum paper width is 13 inches.) There's even a lever to set single, one and a half, or double line spacing. A tractor-feed

mechanism is available for continuous fanfold paper.

Under the hinged cover, you almost expect to find a fanned array of metal arms with typebars attached. What you do see is a cavity with the ribbon and printhead mechanism mounted on a lateral track. A circuit board is mounted at the back. The option switches are accessible through a rear panel.

Removing and installing the cartridge ribbon is neat and simple. You don't have to thread the ribbon. When you press the cartridge into place, the ribbon slides smoothly into alignment. To release the cartridge, just press the lever. Replacing the daisy wheel is easy, too. You just turn the hammer release knob and pull the daisy off. Pressing another wheel on and repositioning the hammer takes no more effort.

Front-panel controls consist of three rocker switches. The best one has three positions labelled 10, 12, and 15. No software-generated codes are needed to change printing pitch (characters per inch) on this printer. You control pitch with software, but you also set it with this convenient switch. Since some word processing programs cannot send printer control characters, this is a real boon.

The second rocker switch, Top of Form, sets two forms-handling options. One handles continuous lengths of paper and the other is for single sheets. In the Set position, the printer automatically spaces over page breaks, leaving top and bottom margins. In the Clear position, it

prints lines without such skips.

The third rocker switch advances the paper to the next line or next page, depending on the Top of Form switch setting. It also actuates a self-test feature if held down when turning the printer on.

On the back panel is the power switch, connectors for the serial and parallel interfaces, and a removable grill covering the internal DIP switches.

Programmable Features

The L-1000 has the basic programmable features necessary for letter-quality printing applications. One feature underlines characters, including spaces. The L-1000 cannot print boldface (multiple-strike), superscripts, or subscripts. The L-1000 sets the top, bottom, and left margins, as well as the page length. You can set any of three common pitches: 10, 12, and 15. Proportional spacing, however, is not available.

Program up to 16 tab stops just as you would on a typewriter—move the printhead to a certain position and send a code to set a tab there. Clear single tabs the same way or clear all the tabs with a single command. Another typewriter-like feature is a margin release that temporarily overrides the set margin.

Documentation

Few user manuals are easy to read or use. The operator's manual that comes with this printer is an exception. The manual is not any more intimidating than the ones that come with household appliances. The technical information is there, but the style, language, and illustrations are the same as you'd expect to find in the manual packed with your new microwave oven.

I recommend the L-1000 for letter-quality printing. It's no speed demon, and it's hardly quiet as a whisper. But, the printer's design and performance are impressive.

I'm impressed, too, with its ease of use. Its sensible typewriter-like operation, excellent user manual, and up-front pitch control will make users feel comfortable very quickly.

The L-1000 is available through Smith-Corona Consumer Products, 65 Locust St., New Canaan, CT 06840. List price is \$595. ■

Jon Voskuil
Milford, NH

The Silver-Reed EXP 500

The Silver-Reed EXP 500 is an inexpensive daisy wheel printer that delivers superior print quality at a reasonable price. For letters, articles, technical manuals, and newsletters, this printer produces significantly better looking copy than other printers or typewriters on the market.

Features and Functions

The Silver-Reed EXP 500 is surprisingly lightweight and compact for a letter-quality printer. It's only a little larger and heavier than my Epson MX-80F/T. Silver-Reed's office typewriter experience is evident in the design of the EXP 500, which is designed to deliver years of reliable service in a home or small office. It has an internal self-test, and it's quiet, attractive, and particularly easy to interface.

One of the printer's best features is that instead of implementing unique command sequences for vertical and horizontal spacing, tabs, or pitch settings, its print commands mimic those of the Diablo 1610. (It possesses the same commands as the Diablo 630 except for proportional spacing found in the more expensive Silver-Reed 550.) Any word processor designed to work with the Diablo should work with the Silver-Reed 500. Since it can be purchased with the Centronics parallel interface, the Silver-Reed 500 is compatible with most computers and word processors.

Every time I used it with a different computer, the Silver-Reed worked the first time. I used the Silver-Reed 500 with Apple Writer 1.0 and The Word Handler, and with both the Epson and the inexpensive Coex standard parallel interfaces.

The printer's capabilities with The Word Handler are particularly impressive—underlining, superscripts, boldface, and even true microspace justification print without inserting complicated control sequences.

I tried the Silver-Reed with a VIC 20 equipped with a CardPrint parallel interface, and also with a Kaypro. It worked on the first try. After the uneventful experiences I had in matching computers, word processors and printers, I found this compatibility amazing. Chalk one up for the foresight of Silver-Reed's designers and for standardization of computer interfaces.

Silver-Reed's ribbons are interchangeable with Olivetti ET series typewriter ribbons, but Silver-Reed's long-lasting multiple strike ribbons are recommended for everyday use. A variety of typefaces is available. Unfortunately, the print wheels are not interchangeable with Diablo or other brand print wheels.

The Silver-Reed EXP 500 handles single sheets of typing paper with an automatic sheet feed. When paper is inserted behind the platen and the "TOF Set" and "Form Feed" buttons are depressed, the platen spins and the sheet is automatically cycled into position, ready to print. Because of this feature, the Silver-Reed is easier to use with single sheets than the Epson MX-80F/T. You just raise the paper bail, insert the paper, push the buttons, and you're ready to print. A tractor feed option is also available.

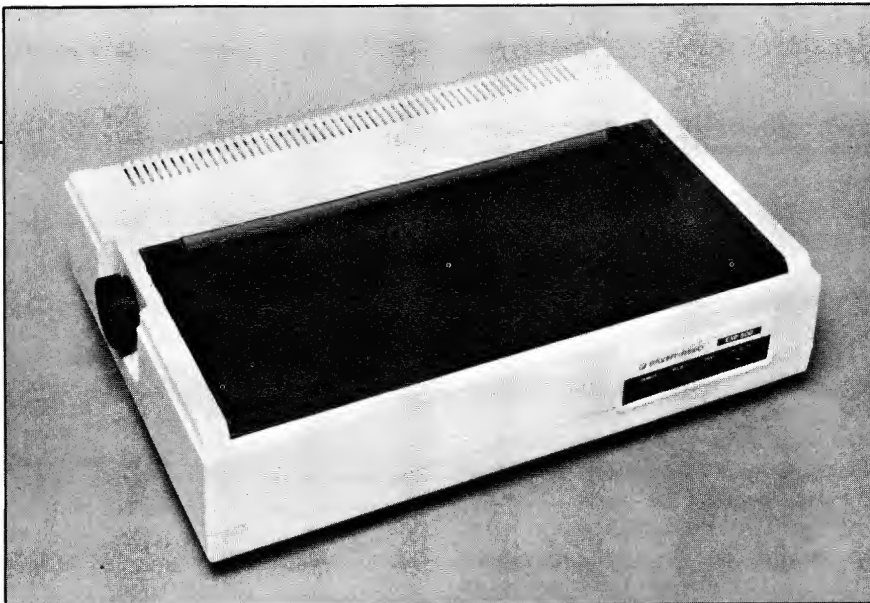
So Nobody's Perfect

Silver-Reed shares a shortcoming with other letter-quality printers in its price range—speed. Although it chugs out a perfectly respectable 12 characters per second, I find it difficult to wait while the Silver-Reed prints a single page at a time. But let's face it. Faster letter quality printers sell for more than twice the price of the Silver-Reed, and that's a lot of money to spend for a few minutes every other hour. I cannot imagine using a relatively slow, single-page printer as my only source of hard

copy for serious programming. A word processing program, such as The Word Handler or Wordstar, is essential if you are determined to get along with a Silver-Reed 500 as your only printer.

I plan to keep my Epson dot matrix for draft copies and program listings. This combines the best of both worlds—fast, legible copy and letter-quality print for correspondence, articles, and academic papers. A cheaper dot matrix would serve as well, but you need a faster dot matrix for everyday work when speed, rather than quality, is important.

Silver-Reed's manual is adequate, but won't provide enough information for an inexperienced user to assess the printer's advanced features. I was grateful for the thorough Epson manuals which help explain Silver-Reed's concise documentation.



The Silver-Reed EXP 500.

The Silver-Reed EXP 500 performs exceptionally well and at \$599, it rivals the more expensive letter-quality printers. The printer is manufactured by Silver-Reed America, Inc.,

19600 S. Vermont Ave., Torrance, CA 90502. ■

Herb Rand
Amherst, VA

Now you can monitor and control the world (or at least your part of it) with a little help from **APPLIED ENGINEERING**

12 BIT, 16 CHANNEL, PROGRAMMABLE GAIN A/D

- All new 1984 design incorporates the latest in state-of-art I.C. technologies.
- Complete 12 bit A/D converter, with an accuracy of 0.02%
- 16 single ended channels (single ended means that your signals are measured against the Apple's GND.) or 8 differential channels. Most all the signals you will measure are single ended.
- 9 software programmable full scale ranges, any of the 16 channels can have any range at any time. Under program control, you can select any of the following ranges: ± 10 volts, $\pm 5V$, $\pm 2.5V$, $\pm 1.0V$, $\pm 500mV$, $\pm 250mV$, $\pm 100mV$, $\pm 50mV$, or $\pm 25mV$.
- Very fast conversion (25 micro seconds).
- Analog input resistance greater than 1,000,000 ohms.
- Laser-trimmed scaling resistors.
- Low power consumption through the use of CMOS devices.
- The user connector has +12 and -12 volts on it so you can power your sensors.
- Only elementary programming is required to use the A/D.
- The entire system is on one standard size plug in card that fits neatly inside the Apple.
- System includes sample programs on disk.

PRICE \$319

A few applications may include the monitoring of ● flow ● temperature ● humidity ● wind speed ● wind direction ● light intensity ● pressure ● RPM ● soil moisture and many more.

8 BIT, 8 CHANNEL A/D

- 8 Channels
- 8 Bit Resolution
- On Board Memory
- Fast Conversion (.078 ms per channel)
- A/D Process Totally Transparent to Apple (looks like memory)

The APPLIED ENGINEERING A/D BOARD is an 8 bit, 8 channel, memory buffered, data acquisition system. It consists of an 8 bit A/D converter, an 8 channel multiplexer and 8 x 8 random access memory.

The analog to digital conversion takes place on a continuous, channel sequencing basis. Data is automatically transferred to on board memory at the end of each conversion. No A/D converter could be easier to use.

Our A/D board comes standard with 0, 10V full scale inputs. These inputs can be changed by the user to 0, -10V, or -5V, +5V or other ranges as needed.

The user connector has +12 and -12 volts on it so you can power your sensors.

- Accuracy: 0.3%
- Input Resistance: 20K Ohms Typ

PRICE \$129.00

SIGNAL CONDITIONER

Our 8 channel signal conditioner is designed for use with both our A/D converters. This board incorporates 8 F.E.T. op-amps, which allow almost any gain or offset. For example: an input signal that varies from 2.00 to 2.15 volts or a signal that varies from 0 to 50 mV can easily be converted to 0-10V output for the A/D.

The signal conditioner's outputs are a high quality 16 pin gold I.C. socket that matches the one on the A/D's so a simple ribbon cable connects the two. The signal conditioner can be powered by your Apple or from an external supply.

FEATURES

- 4.5" square for standard card cage and 4 mounting holes for standard mounting. The signal conditioner does not plug into the Apple, it can be located up to 1/2 mile away from the A/D.
- 22 pin .156 spacing edge card input connector (extra connectors are easily available i.e. Radio Shack).
- Large bread board area.
- Full detailed schematic included.

PRICE \$79.00

DIGITAL INPUT/OUTPUT BOARD

- Provides 8 buffered outputs to a standard 16 pin socket for standard dip ribbon cable connection.
- Power-up reset assures that all outputs are off when your Apple is turned on.
- Features 8 inputs that can be driven from TTL logic or any 5 volt source.
- Your inputs can be anything from high speed logic to simple switches.
- Very simple to program, just PEEK at the data.
- Now, on one card, you can have 8 digital outputs and 8 digital inputs each with its own connector. The super input/output board is your best choice for any control application.

The SUPER INPUT/OUTPUT board manual includes many programs for inputs and outputs. A detailed schematic is included.

Some applications include:

Burglar alarm, direction sensing, use with relays to turn on lights, sound buzzers, start motors, control tape recorders and printers, use with digital joystick. **PRICE \$69.00**

Please see our other full page ad in this magazine for information on Applied Engineering's Timemaster Clock Card and other products for the Apple. Our boards are far superior to most of the consumer electronics made today. All I.C.'s are in high quality sockets with mil-spec. components used throughout. P.C. boards are glass-epoxy with gold contacts. Made in America to be the best in the world. All products compatible with Apple II and //e.

Applied Engineering's products are fully tested with complete documentation and available for immediate delivery. All products are guaranteed with a no hassle three year warranty.

Texas Residents Add 5% Sales Tax
Add \$1.00 If Outside U.S.A.

Send Check or Money Order to:
APPLIED ENGINEERING
P.O. Box 798
Carrollton, TX 75006

Call (214) 492-2027
7 a.m. to 11 p.m. 7 days a week
MasterCard, Visa & C.O.D. Welcome
No extra charge for credit cards

Voice-Based Learning System

The Voice-Based Learning System (VBLS) is a hardware/software combination which permits you to create interactive lessons which can be answered orally instead of requiring the student to type answers on the computer keyboard. The student speaks into a headphone when the appropriate prompt appears on the screen or presses the spacebar to control the speed of presentation of the prompts. The author must know the lesson to be taught, the questioning method to be used, and how to operate the Voice-Based Learning System to create the lesson.

The system can be coordinated with a filmstrip projector, Kodak Carousel slide projector, a printer or all three. The teacher can use available materials with the new technology—something developers of new methods and materials frequently ignore. Teachers can print out the pre-tests, post-tests and student scores.

System Requirements

The VBLS consists of the VET (voice-entry terminal) or "Shadow/VET" unit produced by Scott Instruments Corporation (a headphone, terminal box, interface card and cable), plus the software which allows the user to create teaching programs without knowledge of programming techniques. To use the VBLS, you need an Apple II or an Apple IIe with 48K RAM. To use the Authoring System your computer should have two disk drives, but to use the Study System you need only one disk drive.

The VBLS is a "speaker-dependent" voice entry system. It must "hear" the word or phrase several times before it "learns" it. This applies both to the author creating a teaching program and the student using the Study Disk, as the computer must learn to "recognize" each person's voice. This makes the system very flexible and enhances the possibilities of use with students who have



The Voice-Based Learning System.

speech-related problems.

The Voice Entry Terminal uses speech recognition procedures to analyze user input. When the computer-using "author" speaks into the microphone, the sounds are analyzed and stored as patterns of electronic signals in the computer's memory. These "templates" are stored on the disk and then used as a basis for comparison to the answers later entered (spoken) by the student. The computer can "understand" or recognize words spoken in any language and pertaining to any subject.

In the reference manual, the user will find a complete introduction and an overview of the VBLS. Also included is an excellent tutorial which guides the user through all the steps necessary to create a successful teaching unit. It includes sample lessons, a Lesson Design Worksheet which may be reproduced for future use, and a section on evaluating courseware complete with its own form.

The VBLS is surprisingly easy to install and use with your Apple computer. The microphone snaps into its holder; the cable attaches easily and securely to the card. Once the card is placed in slot 4, the programs run smoothly and effortlessly with good error trapping and easy exits. Even when I tried it without reading the instructions in the reference manual, it worked well.

Where to Begin

The three separate components of the Voiced-Based Learning System software are the Authoring Mode, the Library Disk and the Study Disk. The Authoring Mode first creates the

teaching programs which are stored on the Library Disk and from this disk the student's study disk can be made (again by use of the Authoring Mode). The Study Disk contains both the teaching program and the programs which make it run smoothly.

Before using the Voice-Based Learning System, you should copy the Master Disk; both a copy program and instructions for its use are included in the package. Then the original disk should be put away and the copy used for program authoring. The copy program can also be used later to make duplicate library disks and study disks for back-up purposes.

The blank target disk (Library Disk or Study Disk) must then be placed in the second disk drive and initialized, using the program which appears on the menu of the Master Disk. Once this is done you are ready to begin.

The Authoring Mode

The Authoring system is menu-driven. When it is booted, its menu appears and shows the following choices:

1. Run lesson
2. List lessons
3. Disk functions
4. Change study disk
5. Change profile record
6. Review performance history
7. Author new lesson
8. Change old lesson
9. Train old vocabulary

After choosing number 7 (author new lesson) a new menu appears and offers several more choices. The teacher is asked whether there will be multiple speakers, or whether "branching" will be used in the program. (If a student answers a question correctly, the program moves to one series of questions. If the question is answered incorrectly, the program displays another series of questions.)

You then type in the first question. (Questions should be planned before using the VBLS to create the lesson.) You indicate the end of a question by pressing the escape key and are then prompted to type in the answer.

The VET can only accept answers

which are spoken within three seconds. All questions must either be short-answer format or else use a multiple-choice format where the student will choose a short word or number to indicate the answer.

Each of the answers must have a distinct and different sound pattern for the program to be able to distinguish among choices. The example used in the reference manual is "John Adams" vs. "Don Adams," which the computer cannot distinguish reliably. Even when the VET is set for maximum sensibility, it is not as discriminating as the human ear and is likely to accept similar-sounding words for one another. Although this can be an advantage in some situations (as with a student with pronunciation problems), in others it is not. If the system is used to ask questions requiring answers in a foreign language, it will sometimes accept mispronounced words as correct. While using the student disk, I was able to get the computer to accept as a right answer both "dis" and "dyaz" for the Spanish word *dias*. Even when I adjusted the sensitivity, the computer accepted "diaz" for "dias." When several speakers initialize the sound patterns of answers, this problem increases.

Each answer must be entered into the computer orally (using the VET) five times. This allows the computer to fix the range of acceptable patterns. Once this is done, the user signals the end of lesson creation and returns to the main Authoring menu.

The system is very flexible. If you wish to change a lesson, you can re-enter the lesson from the menu. Before anything is irreparably changed, you are asked whether you are certain that this is what you wish to do. A "no" answer will return you to the menu for further choices. The menu choices also let you "retrain" old vocabulary.

The Authoring Mode can review the "Performance History" of the students if you have set the "Study Disk Profile" to include making a record of the student performance. The Author Disk is placed in drive 1 and the

Study Disk in drive 2. Menu choices do the rest. Scores are presented by showing the number of questions, the number correct, the number of attempts by the student to answer each question, and the percentage of correct answers when the Post-test (if chosen) is given.

The teacher can choose from 40 "items" or variations of program instructions when deciding the format of the Study Disk. They pertain to screen presentation (should the instructor's name or the title of the program appear on the screen, should the spacebar be used to activate the microphone or should it be automatic, should question numbers appear, how many times should input be repeated in the tutorial mode, do you want the student's name to be used in the program?), record keeping and applications. At present seven of these items are marked "Reserved" for placement of future items.

The user's manual gives a full description of each item and instructions to be followed if you wish to make changes from the default values. This profile can then be printed out and saved for future reference. I found the printout to be very useful when I was experimenting with different configurations.

To create a study disk, you select "Disk Functions" from the main menu. This formats and transfers the profile to the initialized disk you have placed in drive 2. Then you can use the "copy lesson" option to copy your lesson to the student disk.

The Study Disk

When the student boots the study disk, a menu of the lessons appears on the screen. The instructor has already decided the modes in which the lessons are to be presented. The elements of the presentations are combinations of:

- Pre-test, which can also be printed out using a printer.
- Word drill, which allows the student to practice the lesson's vocabulary. A graph compares the student's pronunciation to the template of the instructor's voice.

- Tutor/Review—The tutor presents questions with answers. The student is prompted to say the correct response. To review, questions are presented without answers, and the student must enter them when the prompt appears. The teacher controls the number of times a student may input an answer. After this number of attempts, the answer appears on the screen. Correct answers receive appropriate supportive comments. A score-screen may be presented to the student at this time. An option is available so the student can repeat these two modes if it has been pre-programmed by the instructor.

- Post-test, which asks the questions again either sequentially or randomly, as chosen by the teacher. (This option is also available for the Review mode).

The teacher can choose either spacebar control of the program or the computer-controlled prompt. The former allows the student to control the speed at which the program moves from one question to another, but the second method can make the VBLS easier for younger children or students who have limited use of their hands.

Although the Voice-Based Learning System is advertised as ideal for foreign language instruction, it is not at present sufficiently developed for that purpose. Use of a tape and slide unit, or any other sound unit, mitigates the problem somewhat. There is no provision for the display of accents or punctuation not used in English.

The Voice-Based Learning System is an excellent educational tool for many subjects and, if the new capabilities are incorporated with the same concern for quality and ease of use as in the present unit, the Voice-Based Learning System may well become the "magic key" to the world of computers for many teachers.

The VBLS costs \$895. For more information, contact Scott Instruments Corp., 1111 Willow Springs Drive, Denton, TX 76205. ■

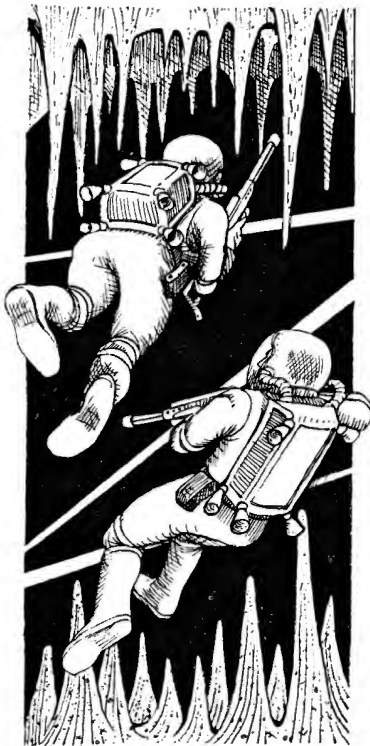
Janet Meizel
Davis, CA

Software Reviews

Caverns of Callisto

All is not quiet on Callisto, one of Jupiter's moons. The caverns, which are man-made mines for the extraction of plimsil, were supposed to be deserted. It was quite a surprise when a horde of mutant creatures emerged from the caverns and tore apart your spaceship!

The beasts made off with the ship's ion drive and 40 panels, which they left scattered all over the caverns. Since it's a 400 million mile walk back to Earth, you've got to explore the caverns and find the parts, no matter what.



The object of the game is to find all 40 panels and the ion drive and return to the ship. The panels are located in five major rooms of the cavern, so you must explore each chamber carefully. You also amass points for shooting aliens and for progressing from room to room.

You control five spacesuited cavern explorers one at a time with your

joystick. Each has a backpack thruster to move them around the maze-like interior of the caverns.

Your spacemen are armed with high-energy plasma rifles operated by pressing Button 0 and the joystick and firing with Button 1. Learning to aim and shoot smoothly is a good survival technique, because the caves are crawling with beasts so deadly that even to touch one means instant disintegration.

Of course, there are other dangers in the old mines, such as fiery geysers and a guardian laser beam that can burn through a spacesuit. Watch the gun and fuel gauges, and look for cannisters of fuel the miners left behind so you can replenish your supply. Also look for pools of plimsil. If you dip a man in one of these pools, his spacesuit becomes impervious to harm for a little while.

Caverns of Callisto does not require expert arcade skills, but it does call for good judgement, patience, and strategy. Caverns of Callisto is manufactured by Origin Systems Inc., 1545 Osgood, #7, North Andover, MA 01845. The list price is \$34.95. The game will run on the IIe and on any 48K Apple II Plus. ■

Brian J. Murphy
Fairfield, CT

Gruds in Space

Gruds in Space is the adventure you must undertake if you hope to save the universe from the invading alien horde of Gruds and deliver fuel to the incapacitated battlewagon floating aimlessly in space.

Scenarist Joseph Dudar and programmer Chuck Sommerville have constructed a puzzling plot that has more twists and turns than a plate of spaghetti. You start with a few basic items—like a screwdriver and a spray can—and with these simple tools you fight monsters and explore dank caves and dense alien jungles as you search for a way to get the heliotropanite fuel you need.



One or two of the aliens may rope you into a wild scheme that could get you in hot water. On the other side of the coin, the Gruds may prove to be helpful in assisting you with your quest. More hints than this, I cannot give you, but knock on every door and watch out where you get your flashlights from.

There are traps that will prevent you from making any progress until you learn to ignore logic and approach the puzzles from a perspective you may not have used in other games. Early on in the game, you will think that you are on the right track when you find some objects that seem obvious. When the answer seems obvious in Gruds in Space, that is the time to beware.

This is not a game that you will solve in one night. You can expect to meet many a grisly fate as you attempt to unravel this knotty trail of logic. Remember to make a backup copy of the second side of the game disk and to save the game frequently, especially when any enterprise seems even the least bit dangerous.

The exceptional quality of the high-resolution color graphics, the interesting and appropriate sound effects, and good humor that characterize this game will make up for the frustrations ahead.

Gruds in Space is the product of Sirius Software Inc., 10364 Rockingham Drive, Sacramento, CA 95827. The list price for this game, which will operate on an Apple II, II Plus and IIe with disk drive, is \$39.95. ■

Brian J. Murphy
Fairfield, CT

Chivalry

“**T**he days of old when knights were bold” sets an attractive theme for Chivalry, a splendid game by Weekly Reader Software. Chivalry combines high-resolution color graphics with handsome packaging and clearly-written documentation to delight mom and dad as much as their eight-year-old child.

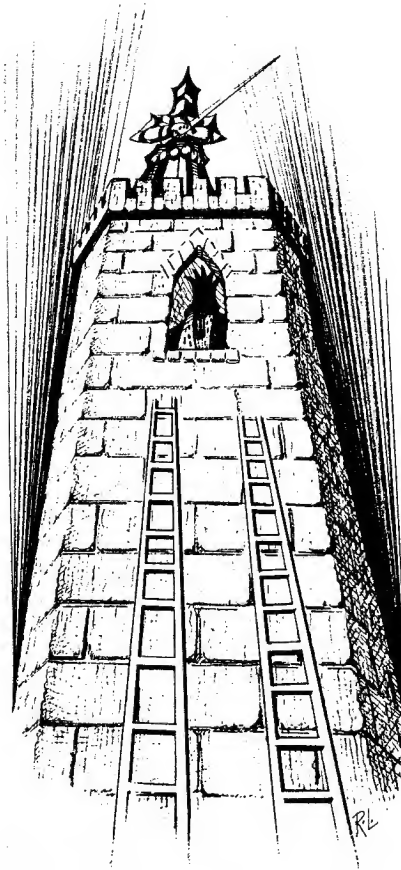
The game mixes the appeal of traditional board games such as Candyland, Chutes 'n' Ladders, and Uncle Wiggly with today's arcade video games. The level of arcade challenge is not exceptionally high, but the idea is to make the game accessible to all players, regardless of skill level.

As the game begins, you learn that the King is a prisoner in the Castle of the Black Knight. Up to four adventuresome heroes may join the quest to cross the kingdom, brave its hazards, and storm the castle to rescue the King from his captors. Players use tokens on a game board to keep track of their progress. On screen, the computer determines how many places the players will move on the trail to the Black Knight's castle.

You must rely on strategy and skill to overcome obstacles blocking the route to the castle. Can you hit a moving target using your bow and arrow? If so, the Archer's Meet won't delay you. But there's always the chance you won't dodge a rolling barrel on Rolling Hill. How well can you operate a catapult? It takes good timing.

Sometimes the simplest tasks are the most difficult, such as using your wagon to catch sacks of flour dropped from a mill loft. After you drop your fifth sack, expect a severe tongue-lashing from the peasant who runs the mill. More than once, oh noble knight, you'll walk away with the cry of “Dolt! Dolt!” ringing in your ears.

A real hero dismisses ridicule. The true test comes from crossing the bridge guarded by a giant troll armed with a mammoth club, winning the jousting tournaments at the Tem-



plar's castle, and finding your way through the Laurel Maze with the Black Knight's paid assassin on your trail. Beware of the Pit, wild bears, and dragons.

During the quest, you'll run across clues that will help you with the more vexing obstacles, such as paths in the south forest and the Wizard's tower. The wizard forces you to choose one of three doors. One door is “evil” and one is “good.” Which do you pick? Use your clues to select the right path.

To enter the Black Knight's castle, you must dodge stones thrown by the defenders. Use the catapult to smash the drawbridge mechanism, and free the gate to let you enter. Once inside, climb the wall of the inner keep and avoid the boulders hurled by the Black Knight. If you survive these challenges, you win.

This software captures the imagination of youngsters while challeng-

ing parents to join in the fun. Chivalry's amusement value is enhanced by the computer graphics created by Richard Hefter. His pictures are among the most original and well-executed computer images designed for Apple II software.

Chivalry is manufactured by Weekly Reader Software/Xerox Education Publications, 245 Long Hill Road, Middletown, CT 06457. The game package includes a hard-backed, full-color game board, playing pieces, a rule book, and disk. The list price is \$49.95. The game will run on the Apple II, II Plus (48K with one disk drive), the IIfx, and the Apple III in emulation mode. ■

Brian J. Murphy
Fairfield, CT

Magic Memory

When I first took Magic Memory home for review, I wondered if the world was ready for yet another address book program. To my surprise, I discovered that Magic Memory is a very good piece of software. Anyone considering the purchase of a personal address book program, a small business mailing list manager, or a computerized record keeper should take a long, hard look at Magic Memory.

Magic Memory is aimed squarely at the neophyte computer user. It emulates an ordinary address book by dividing Magic Memory into sections that correspond to the letters of the alphabet. These sections are referenced by tabs, just as any address book is. For example, to enter or examine entries in the “R” section, you position the cursor over the “R” tab in the View Memory menu. The data that you stored in the “R” section will then be loaded into memory, ready to be added, deleted, edited, sorted, printed, or moved to another tab section at your command.

The contents of the various sections are presented to the user via the Memory Book display. This display consists of the entries list, which dis-

SUBSCRIPTION PROBLEM?

MOVING?

Get help with your subscription by calling our new toll free number:

1-800-645-9559*

between 9 a.m. and 5 p.m. EST, Monday-Friday.

If possible, please have your mailing label in front of you as well as your cancelled check or credit card statement if you are having problems with payment.

If moving, please give both your old and new address.

*New York State residents call
1-800-732-9119.

Circle 16 on Reader Service card.

We Help Bring Your Family Together

6 Types of Charts and Sheets
Indices

User Fields

Notes, Footnotes and Sources

No Limits

Adapts to Your Hardware

Comprehensive

Easy to Use

And Much, Much More

Send for brochure and sample printouts.

Family Roots includes detailed manual and 2 full diskettes of programs for your Apple II* or IBM PC**

Other genealogy software also available.

Price: \$185 plus \$3.50 Postage

American Express, Visa & Mastercard Accepted



*TM Apple Computer, Inc.
**TM International Business Machines

QUINSEPT, INC.

P.O. Box 216, Lexington, MA 02173
(617) 862-0404

plays a key line (called the View Line) from each entry in the tab section, and the View Window, which displays the complete contents (or a user-defined portion thereof) of any single entry that you indicate. Of course, not all of the entries in a section can fit on one Memory Book display (there can be up to 250 entries per section). Magic Memory lets you scroll through a section and examine View Lines until you find the entry you want.

Each Memory Book (which is contained on a single data disk) consists of 24 tab sections identified by a letter of the alphabet (X, Y, and Z are combined into one section), and an additional 24 sections with user-defined tabs. Thus, you can create a separate Memory Book for every application from personal addresses to a list of political contributors. The program is not limited to storing names and addresses, however. You can store any information that you feel is amenable to the tab system used in Magic Memory.

Magic Memory's printing subsystem permits you to create various print formats for different purposes and to store these formats until they are needed. The formatting options are more than adequate and are easy to use. Speaking of hard copy, the documentation provided with Magic Memory is excellent. The format is similar to the documentation used in the PFS software line.

While Magic Memory can be described as a data base program, it should not be confused with its more powerful (and more expensive) cousins. It lacks many of the features of a true, generalized data base management system. Magic Memory is best described as a *specialized* data base system. In the performance of its specialized function, Magic Memory is excellent. That's all I ask, and more than I usually get, from any piece of software.

Magic Memory is a product of ARTSCI Inc., 5547 Satsuma Ave., North Hollywood, CA 91601. It retails for \$99.95. ■

Bob Ryan
inCider Staff

The Graphics Magician

I get the feeling other people are making more money from The Graphics Magician than its publisher, Penguin Software. According to Mark Pelczarski, Penguin president, this Apple-based utility is part of Adventure International's development system for its Apple games, of Sir-Tech's Police Artist (among others), of Sierra On-Line's newest educational products (such as Troll Tales), and will contribute to several upcoming creations from Mattel.

Now, to be fair—and Penguin explains this early-on in the manual—TGM isn't for the computer rookie. You have to know some Basic programming and have at least a minimal knowledge of machine language to create anything like the really sophisticated programs above. But, if you're just starting out, you can focus on learning to structure games and get results without knowing how to write assembly language animation routines. In fact, creating some simple games will help you understand more about both TGM and programming.

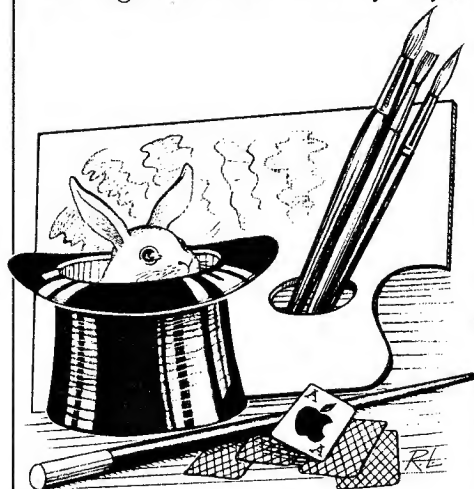
The main criticism of the earlier version of TGM was the denseness of the documentation. The new manual—even with a tutorial and more programming examples and tips—still requires a goodly amount of serious study. But in fairness the various routines do so many things you can't really expect them to be explained in Dick-and-Jane terms. It would help, however, if the manual were indexed. The Table of Contents is complete, but doesn't aid with features that really need to be cross-referenced.

Future Compatibility

A neat thing about TGM is that, eventually, once figures and backgrounds are designed, programmers will be able to use the exact same ones on a number of computers. Penguin plans versions of The Graphics Magician for IBM, Atari and Commodore in addition to the Apple. You'll need

only write new programs for the other computers to access what you've already developed on your Apple II Plus or IIe. You'll be able to build a library of critters and aliens and little people—all hopping or zooming or jogging, alone or in groups—and use them over and over.

Creating and animating objects with the latest version of The Graphics Magician is fun and fairly easy.



Doing the backgrounds—forests, rooms, space stations, whatever—is a bit more tedious, but you can use paddles, a joystick, the Apple Graphics Tablet, Houston Instruments' HI-Pad, or even a Koala Pad if you have one. The backside of the fully-copyable disk offers a demonstration program (the manual explains how it's put together) and a huge number of different types of TGM files for you to inspect and fool around with.

Two Systems

TGM is divided into two parts: the Animation System and the Picture System. You use the Animation System to create a "shape" (critter, cowboy, funky flower), and to make a "path" (tell the shape where to go on the screen). The Animation Editor lets you orchestrate the sequence. You can move the same shape on different paths, different shapes on the same path, or different shapes on different paths—each with little parts moving about, mostly flicker-free, of course. The composition is entirely up to you—and, I might add, can be hysterical when you get results you

don't expect.

You can get a nifty printout with all sorts of technical data about an Animation File. You'll find it most helpful to refer to this hard copy when composing a particularly complicated program.

I tested several of the sample programs to control TGM objects, both with paddles and from the keyboard. They worked well and helped me learn even more about my Apple. Penguin includes a chapter full of "technical stuff" that you won't need right away, but will be vital when you get into machine language routines (necessary to speed up action in arcade-style games).

You use the TGM Picture System to create backgrounds for your animation routines. Or you can use it alone for adventure-style games without animation. The people at Penguin have found a way to save just the moves you make when drawing, instead of the entire hi-res screen. In this way they've reduced sectors needed for storage to as few as four or five, instead of Apple's typical 33 or 34. As a result, you can pack five to six times the usual number of pictures onto an Apple disk (Penguin says 75 to 100), and time to load is cut dramatically.

Penguin includes a sample program—and a disk routine—to combine several pictures for loading at program start. They also provide a way to save your picture in the usual way, which is necessary for the Animation System to work over a background.

Picture This

You create a picture in four basic steps:

- 1) Draw a line with one of eight colors.
- 2) Use a brush, ranging from pinpoint to quite large, and select from a 108-color palette.
- 3) Fill an entire area with one of the colors.
- 4) Insert text anywhere you want in your picture.

You add letters by moving the cursor to the chosen spot and typing T to

Circle 284 on Reader Service card.

THE BYTE GENERAL

3 Sierks Lane • Roslyn Harbor, NY 11576
24 Hour Order Line

Orders: 516-625-0920
Technical: 516-484-6391

Apple IIe Starter System

Includes:

Apple IIe 64k, Drive w/Controller
Apple IIe Monitor w/Tilt Screen
80 Column Card, Tutorial Diskette
Monitor Stand.
ONLY \$1295.00

Printers:

Prowriter 8510a	\$345.00
Gemini 10X	\$269.95
Okidata 92m1	\$425.00
Prowriter Ribbons	\$ 7.00

Modems:

Micromodem IIe w/Term	\$239.95
Hayes 300 Smartmodem	\$199.95
Hayes 1200 Smartmodem	\$469.95
Novation J-Cat Modem	\$100.00
Novation Appletalk II	\$249.95

Apple Disk Drives:

Apple Disk Controller Card	\$ 55.00
Rana Elite I Disk Drive	\$255.00
Shugart 40trk Disk Drive	\$199.95
Slimline 40trk (Direct Drive)	\$199.95
Slimline 40trk (Belt Driven)	\$199.95

Diskettes:

Elephant #1 SS/SD Soft	\$ 15.95
Elephant #2 SS/DD Soft	\$ 18.95

Apple Add-ons:

MPC Parallel Card/Cable	\$ 55.00
MPC 64k 80 Column Card IIe	\$109.00
CCS Serial Card	\$109.00
Kensington System Saver Fan	\$ 65.00
Wildcard Copy Device	\$ 92.00
Wildcard II Plus	\$135.00
ALS CP/M Card	\$289.95
ALS ZCard II	\$199.95
Videx Videoterm (80 Col.)	\$179.95
Videx Videoterm Combo Pack	\$209.95
Videx Ultraterm (160 Col.)	\$250.00
Kraft Joystick	\$ 34.95
Koala Graphics Tablet	\$ 78.00
Orange Micro Grappler + Orange Micro Buffered Grappler	\$119.00
9 1/2" X 11" Printer Paper	\$175.00
Laser Edges	\$ 28.95

DEALER INQUIRIES INVITED

TERMS OF SALE:

There is a 3% charge for Master Card or Visa. When ordering, please add the following amounts for shipping: Diskettes — \$3.00, Hardware — \$5.00 per order. Personal checks - allow two weeks for bank clearance. NY State Residents add 8.25% Sales Tax. Prices and terms are subject to change without notice.

GOLEM COMPUTERS

APPLE
SOFTWARE/HARDWARE
AT SUPER SAVINGS

PLACE ORDERS TOLL FREE
1-800-345-8112
PA 1-800-662-2444 

	LIST PRICE	GOLEM PRICE
ARCADE		
ZAXXON	39.95	27.97
CHOPFLIFER	34.95	24.47
BEAGLE BAG	29.50	20.65
LODE RUNNER	34.95	24.47
STELLAR-7	34.95	24.47
MINER 2049er	40.00	28.00

ADVENTURE		
ZORK I, ZORK II	ea. 39.95	27.97
QUEST, TRANSYLVANIA	ea. 19.95	13.97
ENCHANTER	49.95	34.97
WITNESS	49.95	34.97

STRATEGY		
FLIGHT SIMULATOR II	49.95	34.97
CASTLE WOLFENSTEIN	29.95	20.97
SARGON III	49.95	34.47

FANTASY		
WIZARDRY	49.95	34.97
ULTIMA I, II, III	ea. 59.95	41.97
KNIGHT OF DIAMONDS	39.95	24.47
LEGACY OF LLYGAMYN	39.95	27.97

HOBBY		
BEAGLE BASIC	34.95	24.47
GRAPHICS MAGICIAN	59.95	41.97
UTILITY CITY	29.50	20.65
ZOOM GRAPHICS	49.95	34.97
APPLE MECHANIC	29.95	20.97
PRONTO DOS	29.95	20.97
DOS BOSS	24.00	16.80

HOME		
HOME ACCOUNTANT	74.95	52.47
ASCII EXPRESS: THE PROFESS	129.95	90.97
HAYES TERMINAL PROGRAM	99.00	69.30
CROSSWORD MAGIC	49.95	34.97
VISITERM	100.00	70.00
MICRO/TERMINAL	84.95	59.47

HOME EDUCATION		
MASTER TYPE	39.95	27.97
SNOOPER TROOPS I, II	ea. 44.95	31.47
TERRAPIN LOGO	149.95	104.30
EARLY GAMES FOR YOUNG CHILDREN	29.95	20.97
ROCKY'S BOOTS	49.95	34.97
ALGEBRA I, ALGEBRA II	ea. 39.95	27.97

WORD PROCESSOR		
BANK STREET WRITER	64.95	48.97
SCREEN WRITER II	129.95	90.97
WORDSTAR	395.00	276.50
MAGIC WINDOW II	149.00	104.30
SENSIBLE SPELLER	125.00	87.50
PFS-WRITE	125.00	87.50

BUSINESS		
VISICALC	250.00	175.00
PFS-FILE	125.00	87.50
MULTIPLAN	275.00	192.50
PFS-REPORT	125.00	87.50
DB MASTER	228.00	160.30
PFS-GRAPH	125.00	87.50

HARDWARE SPECIALS		
MICROMODEM IIE/SMARTCOM (HAYES)	240.00	
GRAPLER + (ORANGE MICRO)	125.00	
INDUS GT DISK DRIVE (INDUS SYSTEMS)	240.00	
COLOR 1+ 13" LOW RES COLOR MONITOR (AMDEK)	300.00	
GEMNI 10X PRINTER (STAR MICRONICS)	279.00	
GEMNI DELTA 10 PRINTER (STAR MICRONICS)	479.00	
KOALA GRAPHIC TABLET W/SFT (KOALA)	95.00	
MACH III W/FIRE BUTTON JOYSTICK (HAYES)	40.00	

ALL ITEMS SUBJECT TO AVAILABILITY
 PRICES SUBJECT TO CHANGE WITHOUT NOTICE

 To order, call toll free or send check or money order. VISA/MC, C.O.D. orders welcome. Personal and company checks allow 10 working days to clear. Specify if to backorder or to send refund. California residents add 6% sales tax. Include phone number with order. Shipping and handling: All shipments U.P.S. if possible. Continental U.S. add \$2.00 for 1 to 3 items, 4 to 6 items add \$4.00. APO, FPO Alaska, Hawaii and Canada add \$2.00 per item. 2nd day air add \$1.50. All hardware purchases are prepaid or VISA/MC, shipped U.P.S. include 5% for shipping & handling. Foreign orders add 10% and include check drawn on U.S. bank. C.O.D. orders add \$1.65. Mail orders to

GOLEM COMPUTERS

P.O. BOX 6698
 WESTLAKE VILLAGE, CA 91359

Apple is a trademark of Apple Computers Inc.

access the text mode. Control-L toggles between upper- and lowercase. The first time I added text, I found it very difficult to make corrections in a word three lines up from my current position. Keep track of your X,Y coordinates before you select the text mode so you can relocate the cursor exactly. Also, save a version or two of your picture without text so you can reload it if you change your mind about text placement. Later you can add, delete or change lines and colors to make your picture better. TGM provides a number of utilities to put on your own disks to capitalize on all this work.

If you're serious about writing animated software or fast-moving adventure games—or learning how to—you'll want to take a long look at TGM. It won't design your games or write the programs. You still need to do that yourself. But even at a buck an hour, you'd "spend" more than the \$59.95 to write all those machine language routines yourself. TGM is a superb utility—true graphics magic for the Apple.

The Graphics Magician is manufactured by Penguin Software, 830 4th Ave., Geneva, IL 60134. ■

Ann Baldridge
 Bloomington, IL

Speed Reader II

Speed Reader II is a well designed package that improves reading skills as well as reading speed. To review the program with me I drafted a high school sophomore who had just completed his second consecutive

speed reading course. "Those six-week courses cost me \$45 each," he said, "but I figure it was a good value because I doubled my reading rate."

"That's terrific," I told him. "Now help me decide if this software program is a good value."

We read by moving our eyes across reading material in spurts. Our eyes pause frequently, then move on quickly. It is this eye movement that determines the speed at which we read. The exercises in Speed Reader II are designed to increase your eye span (the number of words you read at each pause), perception (the duration of each pause), and eye movement (the speed with which you move from one group of words to the next).

Speed Reader II is a six-part program. The first two, Letters and Words, are warm-up exercises. In Letters, two, three, or four randomly selected letters are flashed briefly on the screen. You are to type the letters that you saw. Correct responses decrease the time that the following set of letters are visible on the screen. If you read quickly and accurately, you'll proceed through 15 speeds. Each time you err the display time increases. As you advance from two to three to four letter displays, you widen your eye span, thus increasing your reading rate. Our only complaint was that, due to the nature of the graphics used to create the letters, we had difficulty distinguishing between some letters (like m and n).

Like Letters, Words directs you to watch for the "flasher," a small white square which appears in the middle of the screen. By focusing on the flasher and reading the words to its left and right, you expand your peripheral vision. "When you have to



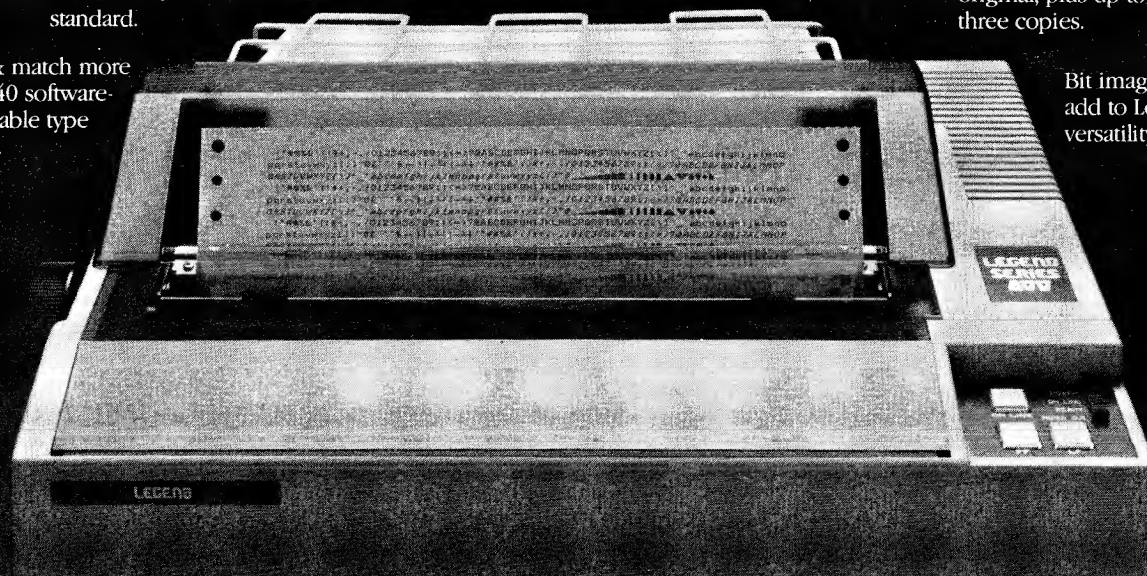
The Making Of A Legend.

Both tractor & friction feed are standard.

Mix & match more than 40 software-selectable type styles.

Prints a crisp original, plus up to three copies.

Bit image graphics add to Legend's versatility.



Centronics parallel interface standard; RS232C optional.

Serial impact dot matrix in two models: 80 & 100 cps.

New square dot technology for higher resolution & near letter-quality print (Model 800).

Up to 142 columns in compressed printing mode.

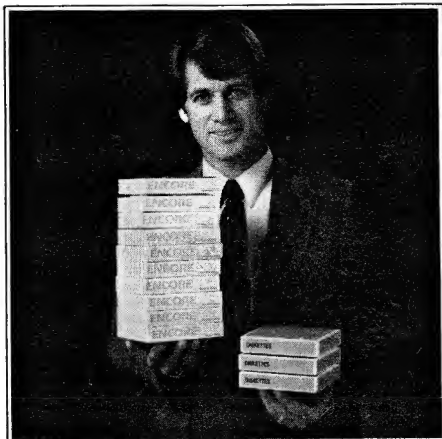
Bi-directional logic seeking for fast output.

Features like these make our new dot matrix impact printer a Legend. While a low price makes it a near miracle! Imagine, all this and more for less than \$350. That puts you into our 80-cps Legend 800 model. And if you're looking for something even faster, look into our 100-cps Legend 1000.

See them both at a dealer near you. Or drop us a line for facts by mail: CAL-ABCO/PERIPHERALS DIVISION, 14722 Oxnard Street, Van Nuys, CA 91401. Telephone (818) 994-0909. Toll free 1-800-321-4484. Telex 662436. Dealer inquiries invited.

LEGEND
PERIPHERAL PRODUCTS
Toll Free 1-800-321-4484

Three good reasons to try Encore[™] diskettes.



1. It saves you money.

Encore diskettes meet the same high standards as the more expensive brands. In fact, Encore actually exceeds system requirements.

Yet you can buy Encore disks for 1/3 the price of the high-priced diskettes. (only \$1.59 for single-sided, single-density 5 1/4" diskettes, when you purchase 4 or more boxes, ten diskettes to a box.)

A diskette intended for a wide range of uses.

Whether you use a lot of diskettes or only a few, you need something more than guaranteed accuracy and reliability. You need economy.

Encore was designed to meet the demand for a reliable, low-cost diskette.

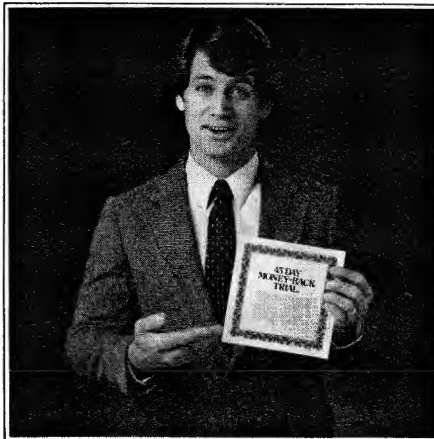
At Encore's low price, it's ideal for memos, rough drafts, spreadsheets, reports, even scratchpad-type uses.

Designed for all major personal computers.

**IBM® Apple® Radio®
commodore® Shack**

Encore was specifically designed to provide optimum performance and reliability on the four leading computer systems. Inmac's Quality Assurance Department constantly monitors all Encore diskettes to ensure they meet or exceed the media specifications for these systems.

Our on-going testing program guarantees that the Encore diskette you buy tomorrow will be as good as the one you buy today.



2. It's absolutely reliable.

Encore is guaranteed for one full year, or Inmac will replace it, free.

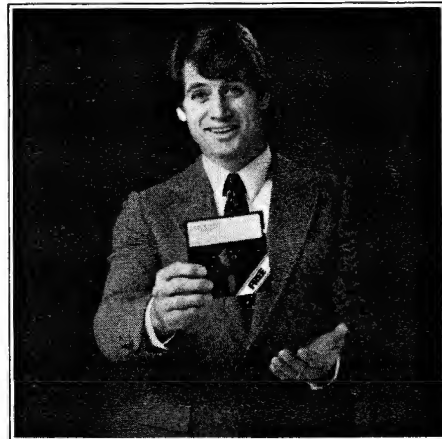
Inmac's Quality Assurance Department requires that Encore meet the media specifications for the most popular systems - Apple, Commodore, IBM, and Radio Shack - exactly. So you can rely on Encore diskettes in your system. They won't lose information or cause read/write errors.

45-day money-back trial.

We're backing our Encore diskettes with a 45-day money back trial because we're positive you'll be delighted with Encore's quality and performance.

And we're sure that once you try Encore, you'll agree that it's the most reliable economy floppy available.

If you don't agree for any reason, just return the three diskettes for a full refund.



3. And you can get one, free.

For a limited time only, we're offering a special trial pack of three 5 1/4" Encore diskettes. You pay the regular price for two of the diskettes, but the third one is free.

We'll send you 3 single-sided, single-density 5 1/4" diskettes for only \$5.19. (Single-sided, double-density for \$5.99. Double-sided, double-density for \$8.79.) Use all three Encore diskettes for 45 days.

Then, if you're not completely satisfied, return the three diskettes for a full refund.

Here's how it works.

Simply mail the attached postage-paid card, or phone our toll-free number,

1-800-538-8157

extension 987. In California, 1-800-672-3470, extension 987.

For this special offer, please include payment with your order. You may send a check, money order, or bill it to your MasterCard or Visa account. Company PO's accepted with verification.

Offer is limited to one trial pack per customer. Good only in U.S. Customer must be 18 years or older to order.

Offer expires September 30, 1984.

Remember to ask for your free Inmac catalog. It contains over 2,500 computer supplies and accessories, many not available anywhere except through the Inmac catalog or special offers like this one.

inmac[™]

2465 Augustine Dr., Santa Clara, CA 95051



Software Reviews

type in the words at level three" (four words displayed on the screen), said my reviewer, "it sure would be more enjoyable if you knew touch-typing."

The Eye Movement lesson gives you practice using the techniques developed in the warm-up exercises. Groups of words flash alternately on the left and right side of the screen and on down the screen. You are to read the text, following the material with efficient eye movement. After each reading selection, there is an optional comprehension quiz. "The good part about this exercise," said my student reviewer, "is that it won't let you look back over what you've already read. That's essential in speed reading."

The Column Reading lesson displays a column of words down the center of the screen. You select the speed that you want the passage to be displayed. The trick here is to read each line with only one eye fixation, or pause. Again, there is an optional comprehension quiz.

The Reading Passage lesson allows you to pick from 15 entertaining reading selections. You choose the speed (100 to 2000 words per minute), and the window size (the number of lines to appear on the screen at one time from 1 to 12). Once again, there is the optional comprehension quiz. "A lot of thought went into these passages," said my young speedster. "Every one of them is interesting."

The Timed Reading Test computes your reading rate and comprehension level. You select a passage to read. It appears one screenful at a time. After you finish reading each screen you press the space bar to call up each successive paragraph. Finally, you take a quiz to determine your comprehension level.

One of this program's outstanding features is its ease of use. Press D as the program is booting and it enters a nicely done demonstration mode that repeats until you press the escape key. In addition, the documentation is excellent. It is clearly written and well packaged in a small durable three-ring binder.

The program has an editor mode

that allows you to enter your own reading material into the exercises. It also allows you to print out your reading material and analyze its level of difficulty with a grade level analyzer. The editor is quite good, similar to the easy-to-use editors of the manufacturer's Math Blaster and Word Attack.

"At \$69.95, is it a value or not?" I asked my young colleague.

"It sure is. It covers the exact same principles as my six-week course—drilling you for speed while emphasizing comprehension. I've shelled out \$45 for that course twice already and my dad wants me to take it again next summer. This software program is a one-time investment—as long as you own a computer."

Speed Reader II is available from Davidson & Associates, 6069 Groveoak Place, #12, Rancho Palos Verdes, CA 90274. Additional data disks for elementary through college students cost \$19.95 each. ■

Mario Pagnoni
Methuen, MA

In Search of the Most Amazing Thing

In Search of the Most Amazing Thing is the adventure game which takes you on an arduous quest within the Darksome Mire for this magical object that reveals the secrets of existence. The first step of your journey is to visit Smoke Bailey deep in the underground city of Metallica. He'll help you raise a financial stake for your adventures by giving you valuables to sell at the Metallica auction. Get as much advice from Smoke as you can. His suggestions will help you trade with the natives for clues leading to the Most Amazing Thing.

Once you've arrived at the auction, test prices for Smoke's treasures on the customers, but be sure you approach them carefully. Sometimes dickering may backfire and drive down the asking price. Never charge more than the audience is willing to pay or they might steal your goods.

TermExec

Lets Your Apple Communicate With The World.

With TermExec, you can send and receive files, of ANY length between your Apple and ANY other computer. You can automate logins and other sequences to send and receive messages at night while you sleep. Or put your Apple in Answer mode to let your friends login to YOU!

TermExec is the Premiere TEXT ORIENTED Software Communications Package, with a built-in Full Screen Editor and a Backscrolling feature so you can review text which has rolled off the top of your screen and save the part you want to disk.

TermExec is EASY TO USE, with a logical and consistent set of commands which explain themselves to the user. HELP is always available.

TermExec is STATE OF THE ART with 80 columns on the Apple IIe, 1200 baud operation, and XMODEM error checking protocol. And we'll KEEP YOU STATE OF THE ART with downloads from our Customer Bulletin Board at 617-863-0282.

Included with TermExec: copyable diskette, tutorial & reference documentation, valuable membership offers to DELPHI and BRS/AFTER DARK.

ORDER NOW FOR
IMMEDIATE SHIPMENT.
VISA and MASTERCARD
ACCEPTED.

ONLY \$79.95

**30 DAY SATISFACTION
GUARANTEE!**

**EXEC
SOFTWARE, INC.**
201 Waltham St., Lexington, MA 02173
(617) 862-3170

System Requirements: Apple II+ or
Apple IIe, one disk drive, 48K RAM,
most modems to 1200 baud.

Assuming you have earned "chips," the local currency, visit the Galactic Store to buy the instruments and computer programs you'll need to navigate the B-Liner and to deal with the natives.

Your next chore is to learn how to pilot the B-Liner, which is a cross between a Land Rover and a hot air balloon. The B-Liner's course depends on the direction of the wind. As you might suspect, the winds over the Darksome Mire tend to be turbulent. At various altitudes, the wind blows in different directions. You'll have a hard time at first learning to press the right keys to toggle the burner and hot air release switches in order to keep the balloon at the right altitude to go in the direction you want.

You'll also learn how to maneuver your jet-pack to search for food and fuel. The pack takes you into pop-



berry fruit trees and onto the B-Liner's drilling rig to prospect for oil.

The B-Liner, when equipped with guidance instruments purchased from the Galactic Store, will take you to the natives' huts for trading excursions. Try to get as close as you can by air, then travel the rest of the way by land.

The natives communicate by bending their antennae, so you'll need the computer programs from the Galactic Store to translate. Trade chips, sell Musix (the natives place a high premium on music), and gather clues to find the Most Amazing Thing. Again, exercise caution. It's surprisingly easy to lose your chips without finding anything out.

Supplied with clues and information, you should be able to find the Most Amazing Thing, but it will require many hours of play. Once you complete your quest, the Most Amaz-

Circle 8 on Reader Service card.

UNINTERRUPTIBLE POWER SYSTEMS BY SUN RESEARCH

For complete protection from **Blackout**, **Brownout**, **Surge** and **Spike** specify a **MAYDAY** Uninterruptible Power System by **SUN RESEARCH**.

Eliminate costly downtime and lost data caused by those momentary power losses. Protect your software and hardware from damage caused by sudden drops in line voltage. Isolate your computer system completely from the AC wall circuit with a **MAYDAY** continuous (On-Line) Uninterruptible Power System. Give all your components clean 60Hz sine wave power for efficient operation at a price you can afford.

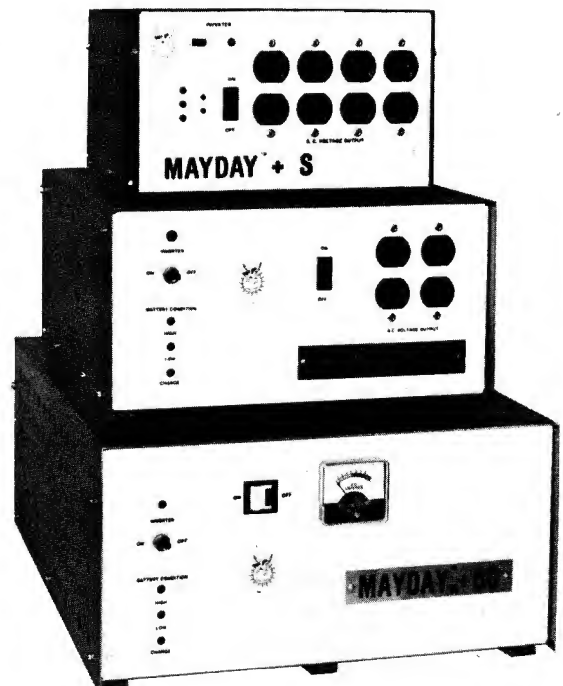
**MAYDAY™ UNINTERRUPTIBLE POWER SYSTEMS
BY SUN RESEARCH**

Available in 150, 300, 600, 1000 and 1500 VA Capacities.

Call 1-603-859-7110



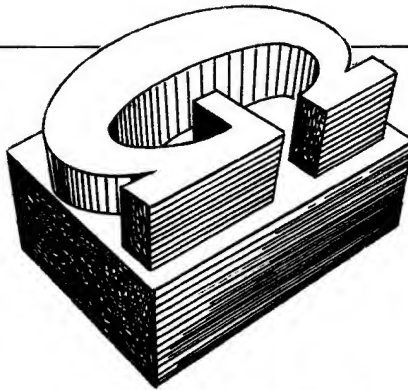
**MAYDAY™ Division
SUN RESEARCH, INC.**
Old Bay Road
Box 210
New Durham, N.H. 03855



ing Thing will be hidden somewhere else and allow you to enjoy the adventure again with new clues and puzzles.

The game provides challenging entertainment and is several cuts above the usual adventure thanks to the play system. In this game, you move about not by typing commands such as "Go east" or "Pick up rock," but by single keystroke commands that manipulate the ship's controls. The riddles and clues are not too difficult to figure out, though a youngster or an adult without previous gaming experience might find the puzzles perplexing.

In Search of the Most Amazing Thing is manufactured by Spinnaker Software of 215 First St., Cambridge, MA 02142. The software package lists for \$39.95, and can be played with any 48K Apple II Plus or



with the IIe in caps lock mode. ■

Brian J. Murphy
Fairfield, CT

Gutenberg

If you are seeking to integrate graphics and typesetting into your word processing operation, you

should consider the Gutenberg programs. This review discusses the Junior version. Where appropriate, there are references to the more expensive, Senior, version.

Gutenberg is more than a word processor; it is a typesetter for the Apple Dot Matrix Printer (DMP). While it provides excellent word processing entry and edit of text, including an 80-column display on the Apple IIe, it goes well beyond these functions. The price for this power is complexity. Gutenberg has myriad options, most of which are activated by a seemingly never-ending list of embedded commands. To understand these command functions, you must examine demonstration files and compare them with the printed results.

Gutenberg can switch between various character sets. Alternate sets

Circle 26 on Reader Service card.

][+ or //e



And now for
Apple ///

YOUR KEY TO PROFESSIONAL WORD PROCESSING



Powerful: All the standard goodies: find, replace, move, save/insert sections. Glossary function for quick entry of commonly used phrases. Form letter (mail merge) built in. File chaining for long documents. Standard text files link to spelling checkers and databases. Printer spooling -- print one chapter while you type the next -- using RAM card or //e Auxiliary Memory.



Reliable: Three years of sales and user support. No surprises. No "death in the night."



Options: ZIP-COMM communications package fits inside Zardax to send or receive text easily. \$80.



Versatile: Over 40 printers and many interface cards supported. You can create or modify printer files if needed. Twelve][+ 80 column cards, plus //e text and Auxiliary Memory cards. Also works in 40 columns. Free and copyable Utilities disk available from dealers adds new devices and features as they become available.



Easy: Editing commands are easy to remember and teach. Two menus for disk operations and printing. Built-in print formatting commands so you don't have to mess with escape or control codes.



New for the Apple ///: More power and features at the same price -- \$210. Text files up to 197K load from ProFile in under 11 seconds. Commands compatible with][+ and //e versions.

Just push our button - -

Dealer inquiries invited.

Apple][+, //e and ///, c. Apple Computer, Inc.

Action-Research Northwest

11442 Marine View Drive, SW.

Seattle, WA 98146

(206) 241-1645 Source: CL2542



can be loaded into memory and selected by a single key stroke. You may translate one key into its alternate or switch the keyboard over to the entire alternate set for a longer text entry. The program comes with several valuable character sets and includes a utility to create and save your own sets.

With keyboard macros, the Gutenberg makes it possible to use one or two keystrokes to enter up to 33 characters. There are three variations of macros. One choice is for use after a return command (perfect for left-justified formats). The other two require that you strike the macro character once or twice. A set of macros can be saved to disk using a provided utility. The manual indicates that they can be reloaded for later use, but does not relate if this is done automatically or manually.

Most word processing programs al-

low you to embed special commands, or macros, which cause printing to occur in special ways. The Gutenberg programs come with extensive format options to set the page layout, paragraph form, print style and other functions, such as print controls.

When determining the page layout, you can select from eight macros. The options include simple single column, double-spaced drafts; double column, single-spaced story or newsletter articles; and others. For creativity, you can build your own macros and position titles and page numbers.

The appearance of paragraphs can be individualized by using blocked paragraphs with adjustable left margins, or by having the paragraphs automatically or manually numbered. Some of the options are useful for letters, form letters, and envelopes.

A novel feature of Gutenberg is

the ability to move two windows into your text file, or to view two different files simultaneously. With this split screen feature, you can easily copy material from one window to another.

Documentation

The manual is unusual since it comes in machine-readable form, that is, in Gutenberg file format (a non-DOS 3.3 file structure). This no doubt keeps the cost down, but brings up a crucial problem. The Junior version is configured to work with only one printer. The version I used needed an Apple DMP, and without the Apple Dot Matrix Printer, you can't print the manual. I hope Micromation changes its policy and includes a copy of the manual with the program. I also found the manual's writing style awkward at

Circle 141 on Reader Service card.

**NEW
FOR '84**

CRACKING TECHNIQUES

Share the secrets of the world's greatest crackers...

Axe Man, Bozo NYC, Candy Man, Cloneman, Disk Zapper, Lock Buster, Long John Silver, Jim Phelps, Mr. Krac-Man, Red Rebel, Trystan II, Reset Vector, The Woodpecker, Mr. Xerox... and many more!

Study complete tutorials on Boot Tracing, Software Tricks, Non-Maskable Interrupt, Ram

Card Modifications, Hardware Tricks and other tried and true techniques. Discover indispensable tips on over 40 specific programs for Apple users.

Customize your software to suit your own needs! Order your copy of **CRACKING TECHNIQUES '84** today. Supplied on disk for Apple Computers.

For faster service, charge your order to
MasterCard or VISA.

\$39.95

Call our toll free number
and ask for **Operator 68**

1-800-824-7888

In California, call 1-800-852-7777

 **PIRATES
HARBOR**

PIRATES HARBOR, INC.
P.O. Box 8928, Boston, MA 02114

VOICE: (617) 227-7760 MODEM: (617) 720-3600

Apple is a registered trademark of Apple Computer, Inc.

YES, I want to learn the secrets of *Cracking Techniques '84*.

☐ Enclosed is my check/money order for **\$39.95** (Massachusetts residents add 5% sales tax).

NAME: _____

ADDRESS: _____

CITY: _____ STATE: _____ ZIP: _____

PHONE: (____) _____

 **PIRATES
HARBOR**

PIRATES HARBOR, INC., P.O. Box 8928, Boston, MA 02114

IC-13

times. I had some difficulty understanding certain points of operation.

The documentation doesn't include a summary listing of the edit commands. Other word processing packages, recognizing that the user must memorize the various codes for edit operations, provide a summary list or reference card. The Senior manual, however, includes an alphabetical list of commands for just this purpose.

An extensive list of format and print commands is provided. They are grouped by function, but not listed in any obvious order. If you try to perform one of the formatting functions, such as setting column formats or the method of initializing a page, be prepared to search the entire six-page listing.

The print command list is similar to the format command list. The list is shorter, however, and contains only

36 formats that can be scanned more easily. Apparently, there are more print commands that are not described in the documentation. According to the manual, "It is not in the scope of the Gutenberg Junior Version to list all 115 commands. To obtain the full list of commands and user manual you will have to purchase the Gutenberg Senior Version."

The manual contains 39 pages describing how to use the Junior and an additional 60 pages of example print and format options and their effects. Unfortunately, there is no index.

Hardware Requirements And Limitations

If you own an Apple II Plus, you must make a simple hardware change which permits the shift key to function. This change is not necessary if you own a IIe, since it has a working shift key. Gutenberg Junior

users are told on the inside package that they must make the necessary connection to a II Plus, but the manual does not mention that this change must be made. It took me some time to realize how to get capital letters on my II Plus. (The manual for the Senior version tells you that you need the shift key modification and how to make it.)

The second hardware requirement is a printer interface card supported by the package. The Junior can work with any of the following: the Apple PIC, CPS, Dumpling, Epson-Prometheus, Grappler or Grappler Plus, Microbuffer II Plus, Microengineering, Pkaso, or Apple Super Serial. If you do not have one of these cards, you may experience difficulty printing out your text, even in the unformatted DUMP mode.

In the Junior version, only one printer was supported—the Apple

Circle 25 on Reader Service card.

NOW... APPLE IMAGEWRITER* COMPATIBLE! From Screen to Paper at the Touch of a Button

SERIAL AND PARALLEL
The new Apple* - compatible ~~parallel~~ printer interface card from Texprint is the **ONLY** way to get fast, easy printouts of ANY screen, at ANY time, with ANY program - in color and black & white.

Push the red button that comes with PRINT-IT!™ - Your program pauses instantly; touch RETURN and whatever is on your screen - text, graphics or both - is printed in color or black & white.

Whether your Apple II, II+, IIe or "look-alike" is for business or pleasure, you'll want the ability to pause and take snapshots of your screen displays and then continue from exactly where you paused, all at the touch of a button - games, business data, menus, educational instructions, graphics - even CP/M*. PRINT-IT!™ will print your screen at any time no matter what program you're running, as well as perform every function you expect of an intelligent printer card.

- PRINT-IT!™ supports:
- Graphics - Low, high, double low, and double high resolution
 - Text - 40 column as well as Apple IIe and Videx*** 80 column cards
 - Printers - All of the most popular printers, including color, are easily selected with a dip switch

PRINT-IT!™ is available at your local computer store now! If they don't have it in stock, ask them to get it for you.

PRINT-IT!™ is also available for \$199 directly from Texprint with an unconditional money-back guarantee. Just return it in good condition within 30 days of purchase, post-paid, for a full refund. Qualified educational and dealer discounts available.

Texprint's Model 2 (with most PRINT-IT!™ functions, except the push button pause/print feature) is the next best printer interface available anywhere, and for only \$149.

* Apple Computer
** Digital Research
*** Videx, Inc.

TEXPRINT

Subsidiary of Computer Products Inc.
8 Blanchard Road
Burlington, MA 01803
Tel. (617) 273-3384

To Order

Call Toll Free 1-800-255-1510



Add \$4 shipping and handling.
Mass res. add 5%

DMP. This is unfortunate since the manual cannot be printed without such a printer. At least the specifications for creating a printer driver could have been included. While new printer drivers may become available (the Senior version supports several including the Centronics 737 and 739, the Epson MX-82FT and 100, and the Qume Sprint 5 and 7 printers), you may not be able to use the package with your printer.

Renovations

Each time the program boots, you must identify your interface card and slot. The request is a serial pass through the list of nine supported cards. While the process is not time consuming, it is annoying. A preferable system, as used by the Senior version, would store this information on the disk and allow the user to modify it.

To get hard copy, while editing issue a control-P command to leave the editor and run a printing program. After printing, you must re-select the file and re-enter the editor. It would be nice if the user could get a rough draft without leaving the editor.

Gutenberg uses its own disk operating system. While a disk can be copied with the standard Apple DOS

3.3 COPYA program, Gutenberg files cannot be read from DOS 3.3. The Senior version comes with a utility, GLOBAL, which exchanges files. Junior users would value such a utility.

The Gutenberg Junior word processor possesses power for formatting graphical text, but is limited by hardware. The manual contains most of the information a user needs, but is a bit difficult to follow. Regardless of its shortcomings, I am not familiar with any other word processing package that provides the Gutenberg's unique capabilities. The potential user may want to compare the Junior version with the Senior before selecting one.

The Gutenberg is produced by Micromation Limited, 1 Yorkdale Road, STE 406, Toronto, Ontario M6A 3A1. The Junior sells for \$85, the Senior for \$325. ■

David Morganstein
Germantown, MD

DiskQuik

What does the extended memory 80-column card in the Apple IIe have in common with var-

ious products called Ramdisks? Not much, unless you have a copy of DiskQuik, a new software utility recently released by Beagle Bros. With DiskQuik, a world of instant disk access becomes available for a fraction of the cost of the typical hardware devices.

DiskQuik is a complete system utility that opens the 64K of RAM on the extended 80-column card for use. In addition to the all-important code that turns the extended card into a RAM disk, or pseudodisk, the system disk contains a variety of utility programs that make using RAM this way very convenient.

DiskQuik looks like a standard disk drive connected to slot 3. All regular DOS commands function with DiskQuik, and they are used in exactly the same way as with a regular disk. The one exception is with the INIT command. DiskQuik needs no formatting, so in place of the INIT command, the authors have provided a new command, WIPE. WIPE clears all programs and data from DiskQuik.

Using DiskQuik is almost exactly the same as using a hardware drive. The authors have provided utility programs on the master disk that make old habits fit right in with the

Circle 67 on Reader Service card.

Attention!
State of the Art®
software users
with Apple II, IIe
your program can
run 3 to 4x faster
with our
Speedup System



The Lobero Building P.O. Box 2342
Santa Barbara, Ca. 93120
(805) 966-1140

Circle 437 on Reader Service card.

The Home Prestidigitator

FOR APPLE IIe

WITH THIS IN-HOUSE MAGICIAN YOU WILL:

ORGANIZE YOUR FINANCES
MAINTAIN UP TO 8 CHECKBOOKS
PROJECT 45 SCRATCH PAD BUDGETS
CREATE AN EXTENSIVE ADDRESS BOOK
CREATE A WEEKLY MENU/SHOPPING LIST
CREATE A RECIPE BOOK OVER 200 TOTAL
CREATE A WEEKLY EVENTS CALENDAR

BUILT-IN EDITORS, SORT FUNCTIONS, USABLE PRINT
OUTS, AND A COMPLETE USERS MANUAL MAKE THE
HOME PRESTIDIGITATOR A PLEASURE TO USE

At \$69.95, it is pure magic!

CALL OR WRITE:

PRESTIDIGITAL SOFTWARE
P.O. BOX 56
URBANA, ILLINOIS 61801
217 328-4674

Apple IIe is a trademark of Apple Computer Inc.

Circle 313 on Reader Service card.

APPLE ANXIETY?



You may never get your Apple up to speed without this **guaranteed**, audio course. Instead of digging through manuals, you and your people will learn by listening. Faster. Easier. And better. Money-back if not delighted — return in 15 days for a full refund. Specify II Plus or IIe (\$57.00), IIe ProDos® (\$39.95) or Apple III (\$110.00). Add \$2 shipping. Credit card holders call

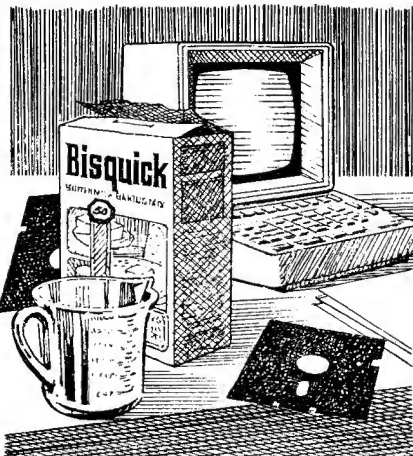
800-222-3547
In IL, call 312-790-0517.

FlipTrack® training tapes from
EFFECTIVE SOLUTIONS
Dept. 101, 15 E. Madison
Lombard, IL 60148

new device. For example, LOCKDQ and UNLOCKDQ are programs that will write-protect DiskQuik (LOCKDQ), or remove write protection (UNLOCKDQ). BRUN either of these to get the desired effect. Another example is CLICKON. This program will click the speaker once for each sector that is read from or written to DiskQuik. BRUN CLICKOFF to silence this effect.

Each of these short machine-language programs can be executed in immediate mode with the BRUN command. If you prefer to use a menu, DQMENU is on the disk. RUN DQMENU and you will be able to choose any of these utility programs by a simple keypress. You must remember, and the manual does a thorough job of reminding you, that running DQMENU will destroy any Applesoft program you might have in memory. If you want to remove write protection from DiskQuik and you do not want to lose your own program, you can BRUN UNLOCKDQ instead of using the DQMENU program.

One of the problems with RAM disks is that they do not provide permanent storage. If the power goes off for any reason, all programs and data will be lost. So, transferring



data from RAM to disk becomes critical if you want to use the information at another time. The DiskQuik disk contains two special copy programs. SAVEDQ will take all of the data in DiskQuik and save it onto an initialized disk in slot 6, drive 1. This is an easy and quick way to save the contents of DiskQuik. When it is time to work again with what has been saved, you use LOADDQ to load the information from the disk in slot 6 into DiskQuik in slot 3.

Four other utilities round out those supplied on the system disk. Two will protect and unprotect the 32 sector portion of the extended memory reserved for hi-res storage. The last two programs will disconnect or reconnect DiskQuik and its modified DOS. With these, you can

reconnect the standard DOS and initialize a disk, for example, without losing any of the information stored on DiskQuik. When ready to continue using the RAM storage, you reconnect DiskQuik and its operating system.

Using DiskQuik

DiskQuik comes unprotected, and the manual recommends making several backups. One of these is for archival protection. The others are for use with the system. It is possible to save the contents of DiskQuik to a plain initialized disk, but if you want to make an autoloader disk, you need to start with a copy of the master disk.

Using the system is as simple as booting the master disk. In less than 15 seconds, DiskQuik has been activated, and in another 15 seconds, a variety of utility programs have been loaded to slot 3. You can customize your own autoloader disk and only load those utilities that you want to use on an on-going basis.

For those who program and use Neil Konzon's GPLE or Mark Simonsen's Double Take, it is possible to install DiskQuik without disturbing these programs. After installing one or both of these, simply

Circle 434 on Reader Service card.

APPLE® -PROM EPROM BURNER CARD

All menu-driven software is provided along with a complete user's manual. All commands are self-prompting, there are no personality modules required and all voltages are on-board card.

BURNS EPROMS	FEATURES
2708 2532 2732	*Auto erase verify
2716 2516 2764	*Auto burn verify
2732A 2564	*Partial burn capacity
only 149⁹⁵	*Low insertion force socket

Now Available APPLE® -PROM Console Unit!

Computer Technology Associates
New Products Division
1704 Moon, N.E.
Albuquerque, N.M. 87112
(505) 298-0942

Specifications subject to change without notice.
Apple is a registered trademark of Apple Computer, Inc.
VISA / MC / AE Accepted

Circle 140 on Reader Service card.

Easy-View™
Disk File Work Station

- Stores 100 Disks, Dust Free
- 25 Disk Titles Clearly Visible
- Fast, Easy Access, Stackable
- Top Flips Back, Locks Upright

RULE ONE \$9⁹⁵ Add \$1.50 Postage & Handling
42 Oliver Street Dept. B
Newark, N.J. 07105 Cash, check or M.O. No C.O.D.'s

Circle 103 on Reader Service card.

The House-Ware Genies

- ★ The Mail Genie
- ★ The Pantry Genie
- ★ The Recipe Genie
- ★ The Calendar Genie
- ★ The Insurance Genie

At last, the Turn-Key Programs that allow Dad to influence Mom that an Apple™ Computer is a modern day necessity.

Introductory Price \$29.95 each

Developed By
SOUTHERN CENTER FOR RESEARCH & INNOVATION
P.O. Box 1713
Hattiesburg, MS 39403
TELEPHONE 601-545-1680
TELEX 585400 SCRI US HATI
CABLE SCRI US

Dealer Inquiries Invited

insert the DiskQuik disk and run the DiskQuik HELLO program. During programming, just save your program to DiskQuik. If slot 3 was the last accessed slot, you do not need an S3 appended to the program name. To use a program on DiskQuik, just load it or run it. On this score, DiskQuik is exactly like using your regular drive.

Text files are created on DiskQuik the same way they are created on a standard drive. You open your file on DiskQuik from within a program and write to it. Read the data in the same way. This is the area that DiskQuik's speed is most apparent.

There are two ways to permanently save work to a disk. One method uses Apple's FID program. Beagle Bros thought so much of FID for use with DiskQuik that they licensed it from Apple and include it on the DiskQuik system disk. FID is loaded into DiskQuik along with the other utility programs. To transfer a file to or from DiskQuik from a disk, just BRUN FID and use the commands you've always used. However, FID now operates much faster. The unlock, lock, or verify functions used with a wildcard title and without prompting are completed in only a few seconds.

The second way to permanently

save work is to use the SAVEDQ utility. As mentioned above, this program will copy the entire DiskQuik image onto an initialized disk in slot 6. Any files on the disk before using SAVEDQ will be lost. Additional files may be saved on the physical disk by traditional means, and then the entire disk can be "copied" back into DiskQuik using LOADDQ.

Using DiskQuik is as natural as what you've been doing with your regular disk drives. Everything about the system is designed for ease of use with little new to learn.

DiskQuik is a clever, well designed set of machine language utilities that should help you save significant time. If your use of the Apple requires frequent disk accesses, then DiskQuik can increase your productivity. Because it has been designed to act like what you are used to, learning is fast and not many new habits are needed.

There are two obvious ways to benefit from the DiskQuik speed and convenience. First, as a programmer, you probably do a lot of saving of intermediate programs, EXECing subroutines into your programs, etc. DiskQuik will eliminate the time spent waiting for the disk drive, and you can more quickly move on to your next step or operation. Second,

DiskQuik can be accessed from within programs, just as you would a regular drive. Programs such as data base managers that make frequent trips to the disk will be speeded up when results are kept in slot 3 instead of slot 6.

As an example of the speed improvements that are possible, I did a few simple timing tests. Activating FID took 1.8 sec from DQ, 8 seconds normally. Unlocking 23 files (using the wildcard, no prompt approach) took 23 seconds normally, 3 seconds with DiskQuik. A BLOAD of a 76-sector file took 6.7 seconds with DQ, 21.5 seconds normally. Saving a full DiskQuik took only 20 seconds.

The biggest trade-off when using DiskQuik is the inability to use DiskQuik from within protected programs. You cannot save VisiCalc or AppleWriter IIe files to DQ. Even if you install DQ, it is disconnected upon loading one of these protected programs.

Another big trade-off is the size of the storage you have available. A standard 5¼" disk has 496 sectors available for user storage. This amounts to 127K characters. The 64K of RAM on the extended card can be turned into 238 usable sectors of storage. Eight sectors are used for



FOREIGN COMPUTER STORES MAGAZINE DEALERS

You have a large technical audience that speaks English and is in need of the kind of microcomputer information the Wayne Green Publications group provides.

Provide your audience with the magazine they need and make money at the same time. For details on selling **Microcomputing**, **80 Micro**, **inCider**, **Hot CoCo**, **RUN**, **jr.** and **Wayne Green Books** contact:

Sandra Joseph
World Wide Media
386 Park Ave. South
New York, N.Y. 10016
Phone—(212) 686-1520
Telex—620430

This publication is available in microform.

University Microfilms International

Please send additional information

Name _____
Institution _____
Street _____
City _____
State _____ Zip _____

300 North Zeeb Road
Dept. P.R.
Ann Arbor, Mi. 48106
U.S.A.

30-32 Mortimer Street
Dept. P.R.
London WIN 7RA
England

Subscription Problem?

inCider does not keep subscription records on the premises, therefore calling us only adds time and doesn't solve the problem.

Please send a description of the problem and your most recent address label to:



Subscription Dept.
PO Box 911

Farmingdale, NY 11737

Thank you and enjoy your subscription

directory and VTOC information.

When you copy the DiskQuik image to an initialized disk, you create a disk that is somewhat different from standard disks. Because of the space limits in DiskQuik, an image disk is permitted to hold only what will fit back into RAM. The VTOC is adjusted so that only 238 sectors are available. You can use an image disk in the same way as any other disk—you can save to it, load from it, delete, lock, and so on. However, when you reach 238 sectors while saving, you'll get the standard "Disk Full" message.

The other different disk you will use is an autoloader disk. This disk performs like the DiskQuik master disk, will initiate DiskQuik, and will load the DiskQuik image upon booting. To make your own autoloader disk, you must start with one of those multiple copies of the master disk that you made. You then add or remove different programs (the manual takes you through a step by step procedure for this) until you have the desired set of programs aboard. Upon booting, you get all of these loaded into DiskQuik automatically.

The autoloader disk is, in the words of the authors, "a strange beast." A DiskQuik autoloader disk has two di-

Track	Contents
00-02	DOS (modified to expect VTOC on T 3)
03 S 0,1-2	VTOC and Directory for Autoload Programs
03-04	Autoload Programs (uses T 3 Directory)
05	Directory Extension for Autoload Programs
06-0F	Reserved for User Autoload Programs
10-0F	DiskQuik Image, as SAVEDQED
11	DiskQuik Directory (S 9-F) and VTOC (S 0)
20-22	Reserved for User Autoload Programs

Figure 1. Track assignments—autoloader disk.

AUXMEN Range	DiskQuik Usage	Comment
\$0000-\$01FF	Not Used	
\$0200-\$02FF	Flags	DiskQuik flags/temps/code
\$0300-\$03FF	Buffer	DiskQuik working buffer
\$0400-\$07FF	Not Used	Auxiliary Text Page
\$0800-\$09FF	Code	DiskQuik Routines
\$0A00-\$0FFF	T 10, S A-F	Normal DiskQuik Storage
\$1000-\$10FF	T 11, S 0	DiskQuik VTOC
\$1100-\$17FF	T 11, S 1-8	Normal DiskQuik Storage
\$1800-\$1FFF	T 11, S 9-F	DiskQuik Directory
\$2000-\$2FFF	T 12	Auxiliary Hi-Res Page
\$3000-\$3FFF	T 13	"
\$4000-\$4FFF	T 14	Normal DiskQuik Storage
\$5000-\$5FFF	T 15	"
.....
.....
\$B000-\$BFFF	T 1B	"
\$D000-\$DFFF-1	T 1C	"
\$E000-\$EFFF	T 1D	"
\$F000-\$FFFF	T 1E	"
\$D000-\$DFFF-2	T 1F	"

Figure 2. Memory and DiskQuik usage.

rectories, one on track 3 and the normal one on track 17. The track 3 information allows a single disk to contain the autoboot code which installs DiskQuik, including all utili-

ties and saved programs. Track 17 contains a regular directory of the DiskQuik programs, although these are limited to a maximum of 49 files (consistent with the reduced storage

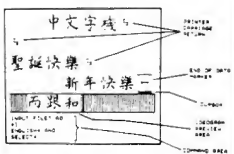
Circle 530 on Reader Service card.

CHINESE WORD PROCESSING

中文字機

Hi Res Brush Stroke Calligraphy
Invitations Notices
Letters Reports

- 400 Character Basic Vocabulary
- English Dictionary for Input
- User Expandable
- Define New Characters
- Expand English Dictionary
- Insert/Delete Characters
- Read and Write to Files
- Runoff to Printer



for APPLE II+ or 48K and 1 Drive
Microline Epson (graphics) Printers
Send check or money order to:
DUNE ASSOCIATES
P.O. Box 1631
KAILUA, HI 96754

\$69.95

Circle 168 on Reader Service card.



RS232C Computer compatible Paper Tape Transmitter/Model 612

Stops and starts on character at all speeds, uses manual control or X-on, X-off 90-260 volt, 50-60 Hz power. 50-9600 baud, up to 150 char/sec synchronous or asynchronous; gated internal or external clock, RS 232C, current loop or parallel output, reads 5-8 level tape, 7-11 frames per character, even or odd parity. Desk top or rack mount.

Addmaster Corporation, 415 Junipero Serra Drive, San Gabriel, CA 91776, (213) 285-1121, Telex 674770 Addmaster SGAB

Circle 67 on Reader Service card.

P.F.S.* Users, Time is Money!

Your entire program can run
2½ times faster with our
New Speedup System!

*trademark: Software Pub. Co.



The Lobero Building P.O. Box 2342
Santa Barbara, Ca. 93120
(805) 966-1140 Telex 658439

Settle Your Bowling Scores "BOWL-KEEPER"

\$29.95

- Stores, Calculates and Prints
 - Individual games
 - Weekly series
 - Weekly average
 - Total pins
 - Cumulative average
 - Handicap (optional)
 - High series
 - High game
- Menu Driven
- League or Individual
- Applesoft Basic
- Unprotected
- Apple II+/IIe, Single Disk

_____ Copies Bowlkeeper @ \$29.95 ea.

_____ Total

_____ 5% Sales Tax (FL residents only)

\$2.00 Postage & Handling

_____ Total Order

Name _____

Address _____

City _____ State _____ Zip _____

Send Check or Money Order

To

SOFTWARE UNLIMITED

P.O. Box 6361

Clearwater, FL 33518

(C.O.D. Orders ONLY 813/797-7815)

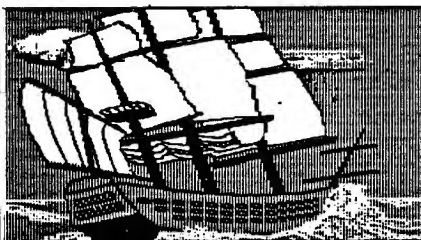
Circle 523 on Reader Service card.

ANNOUNCING AN END TO DREARY EDUCATIONAL SOFTWARE!

THERE'S A WORM IN MY APPLE

NOW IMPROVING YOUR PROGRAMMING SKILLS CAN BE AS MUCH FUN AS PLAYING GAMES. IN FACT, IT'S TWO GAMES, AND GRAPHICS, AND MUSIC, AND TALES MOTHER GOOSE FORGOT. IT'S MYSTERY, INTRIGUE, SUBVERSIVE ORGANIZATIONS, AND HUNTING DOGS. IT'S TWO DISKETTES AND 97 PAGES FULL OF FUN. AND IT'S ONLY \$39.95 (F.O.B. HILTON). THAT'S MORE FUN PER DOLLAR THAN MEASLES AND CHICKENPOX COMBINED. AND IT'S A GREAT WAY TO SPEND THE TIME IF YOU HAVE EITHER!

ELECTRO - GRAPHICS



YOU DON'T HAVE TO WAIT
UNTIL YOUR SHIP COMES IN
TO BUY A GREAT GRAPHICS PACKAGE

NOW FOR LITTLE MORE THAN THE PRICE OF A GAME
YOU CAN OWN A TOOL THAT WILL HELP YOU CREATE
GAMES, PICTURES, CHARTS ETC. NO EXPENSIVE
EXTRA HARDWARE TO BUY. EZ KEYBOARD/JOYSTICK
CONTROL AND UNIQUE "OVERLAY" SYSTEM MAKES
PRECISE DRAWING OR FREEHAND SKETCHES A SNAP!

FEATURES INCLUDE: LORES OR
HIRES DRAW * CUSTOM COLORS * TEXT IN COLOR *
SHAPE TABLE CREATION * SCROLL * INVERSE

ONLY \$49.95

SEND CHECK OR MONEY ORDER TO
MICROMINDS UNLIMITED
200 WALKER LAKE ONTARIO ROAD
HILTON, NEW YORK 14468
OR TELEPHONE 716-964-7288

space). Figure 1 shows exactly what the track and sector assignments are for the autoloading disk and Figure 2 shows the memory ranges in the auxiliary memory used by DiskQuik.

The DiskQuik manual is well written and complete. It leads you through the steps of getting started, and gives you a complete description of the utilities on the master disk. Also nice is the authors' anticipation of how you might want to use DiskQuik. There is a complete explanation of programs that are and are not compatible with DQ, as well as a description of how to create an auto-boot disk that automatically installs your other favorite utilities before DiskQuik is installed. There is a technical section that gives memory information and identifies main memory locations that are modified by the DQ code.

All in all, this is a very useful, well designed piece of software. You'll be able to enjoy the benefits of a RAM type of disk without the higher expense of some of the hardware devices on the market. Beagle Bros traditionally provides low-priced quality software, and DiskQuik provides the same high value that people are used to from this company.

DiskQuik is made by Beagle Bros, 4315 Sierra Vista, San Diego, CA 92103. Price is \$29.50. It requires an Apple IIe with an extended 80-column text card. ■

Kenneth S. Close
Cincinnati, OH

Work Force II

Work Force II is a blend of six programs for your home or office. The package comes with a non-protected copy disk and a concise, 15-page manual. The Basic programs are self-prompting and menu driven, so you rarely have to refer back to the instructions.

The most useful of the six is a check balancing program that reconciles not only your outstanding checks and deposits, but also keeps tabs on ser-

vice charges and earned interest. The system lets you know if your checkbook balances and prints a hard copy of your account's status.

Another program is an on-screen calculator with memory. The Wage Analyzer lets you input salary amounts and calculates your earnings by seven categories (time and a half, yearly, and so on). You can manipulate this data by percentage amounts, to see what effect an increase of, say, five percent has on your wages.

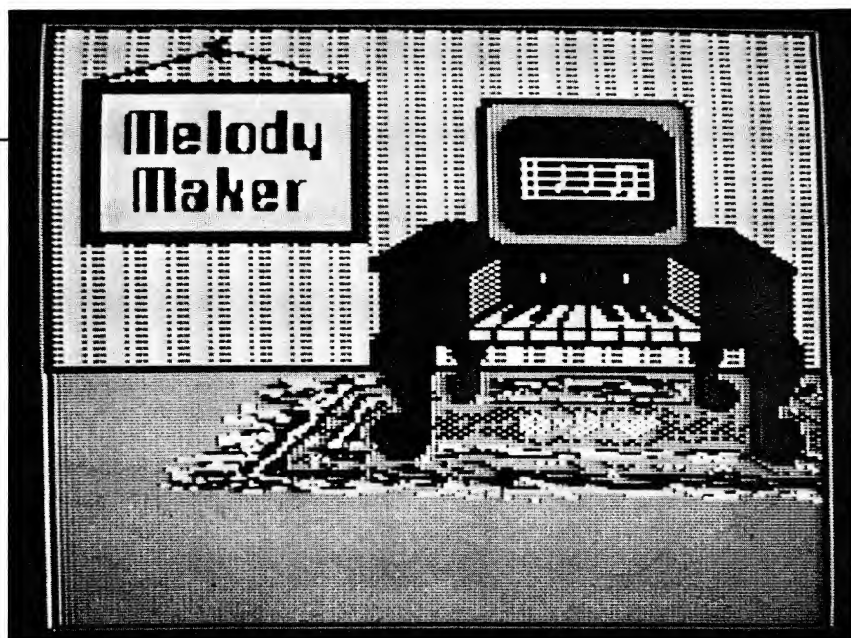
Borrowing money is no problem with the loan analysis section to guide you. The program considers how much money you want to borrow, for how long, at what interest rate, and computes your monthly payment. It offers flexibility, even down to working with weekly amounts. You can print an amortization schedule and head the reports with a date or comment line.

"Borrowing money is no problem with the loan analysis section to guide you."

The Savings Analyzer is similar to its sister program and allows you to enter deposit amounts, the interest rate, and deposit periods. It computes your balance, including interest.

The last part of Work Force II is Line Writer, a line-at-a-time correcting typewriter. While Line Writer can perform simple tasks such as address envelopes, it's more useful for typing practice. It prints in uppercase, unless you have an Apple IIe or an 80-column card in your Apple II Plus. The system won't work properly with all 80-column cards, however. It did most things fine with my Videx, but the on-screen display was a bit ragged.

As with any program, the question here is value. If you'll use Work Force II to balance your checkbook, display or print loan amortization or savings analysis schedules, and practice typ-



Melody Maker is a feature in the second issue of Microzine, the children's magazine on a disk.

ing, it is easy to understand and operate. It's an honest value for \$29.95. The system is available from Core Concepts, PO Box 24157, Tempe, AZ 85282. ■

Gregory Glau
Prescott, AZ

Microzine

Microzine is the first children's magazine in computer format. It is marketed by the same folks who have been publishing *Scholastic* for the past 60 years. I had a bad disk, but the company quickly and courteously replaced it.

The first program is "Haunted House," an adventure story that lets you change the plot and dictate the outcome. Over 20 courses may be taken with strange twists along the way. You would have a hard time getting bored with all the endings possible. Some of the outcomes include: being in trouble with your parents; beating Nilvail in a joust of strength; Murray the Ghost comes home; or you are a hero.

The next feature, "Ask Me," allowed me to interview Robert Macnaughton, Elliot's older brother in *E.T.* "Ask Me" is conducted like a news conference. A pair of words called "question roots" moves across

the screen. I chose "What is?". The computer gave me three endings: "your favorite type of music?", "it like to be famous?", and "your favorite movie?". I selected the second ending and Robert's answer was, "I don't feel different—it's the rest of the world that seems different."

The third program, "Poster," is more challenging. Using a simple yet powerful programming language, I created some gorgeous posters using

**"You would have a
hard time getting
bored with all the
endings possible."**

every color on the computer spectrum. A data disk is included in the package for saving your masterpieces. This program was the most complex and required a little extra time learning the commands that control brush width, screen color, brush noise and speed.

The last feature on *Microzine* is "Secret Files." Students can store information on a topic of particular interest. It was quite simple. My ten-

Circle 512 on Reader Service card.

AT WITT'S END? Thousands of people have had the unpleasant experience of being stumped by an adventure, whether it be in the complexities of an Infocom Interlogic™ experience or a limited one with a small vocabulary. Yet, you'll never be again, for we now produce Witt's Notes™ (complete hints and maps) for many of the adventures on the market.

Witt's Notes™ are not crib sheets, they are comprehensive booklets which try to analyze every potential problem that an adventurer might encounter. Yet, we can assure you that, if used properly, our hint booklets should never give away unwanted answers.

Currently, select from these popular titles: *Sherwood Forest, Kabul Spy, Blade of Blackpoole, Critical Mass, Colossal Cave, The Quest, Transylvania, Coveted Mirror, Mystery House, Wizard, Cranston, Ulysses, Time Zone, Dark Crystal, Mask of Sun, Serpent's Star, Zork (I, II, or III), Deadline, Starcross, Witness, Suspended, Planetfall, Enchanter, Infidel* and many more. Best of all, each is only \$5.95. Dealer inquiries invited. CT residents add 7½% sales tax.



WITT'S END
42 Morehouse Rd.
Easton, CT 06612
(203) 254-0728



Circle 223 on Reader Service card.



In less than 5 minutes, the Kitchen Planner will help you create and print up to 14 days of balanced meals, PLUS...it will prepare a shopping list for you.

- ★ EASY TO USE ★ FLEXIBLE ★
- ★ SAVES TIME ★

- Creates 1 to 14 day menus, single meals or single items from up to 200 of your favorite meal items.
- The only program available that composes balanced meals and lets you change them!
- Compact, usable printout.
- Clear, Concise User's Manual.
- Add or change any meal item or ingredient in the database with ease.
- Reference your favorite cookbooks and recipes.

TESTED AND GUARANTEED
Send Check or Money Order to:

SAV-SOFT PRODUCTS **\$29.95**
P.O. Box 24898
San Jose, CA 95154
(add \$1.50 handling; in CA add 6½%)

VISA, MC call : (408) 978-1048
48 K Apple II, II+, IIe, 1 disk, printer
Apple is a trademark of Apple Computer, Inc.

year-old made a list of recipes which she could quickly sort. She also created an address file and a phone list of her friends.

I found *Microzine* to be fun as well as intellectually challenging. All of the programs teach something about computer literacy in a subtle way. Kids learn about computers and academics without knowing that they are learning.

Microzine is published by Scholastic Wizware, 730 Broadway, New York, NY 10003. The suggested retail price is \$39.95 for each bi-monthly issue, or \$149 for a year's subscription. ■

Nancy White Kelly
Stockbridge, GA

TermExec Version 1.2

Telecommunications has come a long way from teletypes and telephone patch cords. Although priced at a modest \$79.95, TermExec Version 1.2 is more ambitious than other Apple communications programs. The manual and software offer enough options to transmit text files between an Apple and virtually any other computer. You can save and recall configurations for as many different host systems as you want. To create a new file for each computer, you simply toggle through the options until the right one appears, or type in any special setting.

Getting on Line

Start by making a copy of the unprotected master disk and using the working copy. TermExec includes the usual features, such as sending files between two Apples, setting up a chat mode, and accessing club bulletin boards or commercial databases. But it offers internal features that others don't. You can scroll left, right, up, or down through a 7000-character buffer, and even "unwind" a file to make it wider than the standard 40- or 80-character Apple screen. You can select from the scroll and save the information from the

disk. TermExec allows you to transmit and receive standard ASCII text files, or any file, to another computer using the XMODEM error-correcting protocol. If you don't want to use your text editor, the disk includes one and a Convert/Copy routine to capture any Apple file (even binary) in a standard text file.

The Convert/Copy routine needs work, though. Although it successfully copies and converts files with one or two disk drives, its prompting sequence is not as clear as it could be. In one case, where an incorrect file name was entered, the copy program saved itself as a text file and then couldn't find the original file. In most cases, it did catch the correct files.

TermExec makes every attempt to keep you going. The program prompts you and help screens are only a question mark away.

Documentation

The 99-page manual comes in a 10-by-11½-inch looseleaf binder. The tutorial got me online fairly easily, but the manual assumes you know the terms, conventions, and protocol of telecommunications. While some terms become clear as you work through the different operations, many don't. (For more information, read *The Complete Handbook of Personal Computer Communications* by Alfred Glossbrenner.)

The TermExec manual warns that you will need some experience using the other computer—at least the first time you try to send or receive a file. Documentation includes an index to cross-reference text files.

On the positive side, the manual doesn't assume you'll remember all the commands. Each lesson guides you through the command sequence for a particular operation. The software does provide a help screen and checks the syntax of each command before executing it. Error messages appear if you don't follow the rules.

TermExec does a lot for the money. Other programs allow only limited communication without as many options, so they're simpler to

use. A limited database with only a few functions is easier to learn than, for example, dBase II. By spending time with the more complex program, you can accomplish better work. TermExec is worth spending the time to learn.

TermExec is a sophisticated communications package that includes a number of options for going online with just about any other computer anywhere in the world. The program is manufactured by Exec Software, 201 Waltham Street, Lexington, MA 02173. Updates, as they are released, are \$19.95 each. ■

Ann Baldridge
Bloomington, IL

BPI Accounts Receivable

BPI's Accounts Receivable program comes to your business with the expected, standard functions, but with added bonuses. Among these is the queue (pronounced *cue*), a memory bank that lets you store and execute commands. The system provides customers with a regular account that will add finance charges to past-due amounts. But the program also tabulates revolving charge accounts, where the monthly payment is a percentage of the total balance, as well as a fixed amount every month.

The system includes a tutorial disk with data and transactions based on real-life examples. All program disks are non-copy protected. As an option, a password provides security for your files.

Invoice numbers are automatically entered (from 1 to 9999), although you can override the number. You're allowed a 16-character description of each charged item. Numerical entries don't need decimal points; the system adds them automatically. Once the data from each invoice has been entered, you get a chance to reject or change any item. This program doesn't print an invoice for you, but lets you enter its information (num-

ber, amount, breakdown) into your accounts receivable system.

After a sale, the account breakdown is recorded as in the following example. For a \$56 customer purchase, \$25 is recorded for material sales, \$30 is for labor, and \$1 is for sales tax. BPI's Accounts Receivable creates default items for those things you normally sell (such as materials, labor, and sales tax) so you don't have to post account numbers, because defaults show up on each posting screen. Of course, you must step through each default you don't have an entry amount for with the return key. You do your posting in batches, letting you enter 10 data sets before anything is saved to disk.

Powerful Capacity

On each data disk, customer information and transactions compete for disk space. A data disk can hold a maximum of 450 customer accounts, but if you have more you can instruct the system to work with multiple data disks. Your customer base can be as large as you need it. If you ever expand to a fixed disk, the system will handle it.

You may use either the balance forward accounts (where payments apply to the total amount due), or the open invoice method (where each invoice remains open until it is paid). The program specifies two different levels of finance charges depending on the outstanding balance. You set the parameters for both the amounts and the percentages. If you have BPI's General Ledger, this accounts receivable program will automatically transfer its data to your G/L files and enter data for up to 120 different G/L accounts. The directions on how to connect accounts receivable to other BPI systems (like its General Ledger) are only fair, however. BPI's Accounts Receivable can provide you with data for more than one company on each data disk.

Reports

The heart of any accounts receivable program is the customer report it creates for you. Monthly statements

must be sent to your customers, and you should know who is behind in payments. BPI performs well for you here and has a variety of report formats to choose from, including a standard aging summary, an alphabetical or numerical list of accounts, a summary by type of account, a list of customers who are delinquent in their payments, and even a listing of those customers who aren't assessed finance charges.

You can print mailing labels and past-due notices. When you configure your printer, it can print both upper and lowercase. You also may change the slot location of your printer—an option many programs don't have. You can print a special 50-character message on your statements.

Weaknesses

Unfortunately, the only way BPI's Accounts Receivable lets you know how much disk space is available is by using the FID program on your DOS master disk. Other accounting packages inform you of remaining disk space by a little note on your screen. Not only is that easier for the user, but it doesn't require any "computer talk."

BPI's Accounts Receivable system interfaces with its Inventory program (so invoice data transfers to the A/R part of the system). You cannot effect this automatic transfer if accounts receivable customers are on more than one data disk. The system isn't particularly fast to load (almost a minute), nor does it sprint between new functions. Each aging summary prints accounts with a zero balance, which is a waste of printer time and paper.

Effective Accounting

These imperfections are minor blemishes on an outstanding accounts receivable program for the Apple IIe. There are all sorts of checks and balances—you can't delete a customer who has an account balance, or overwrite an existing account by mistake. Worksheets come with the system to assist you in getting started. You can escape from any menu selection

without a hassle. While I can't describe this system and its documentation as amiable, it's certainly effective from an accounting standpoint.

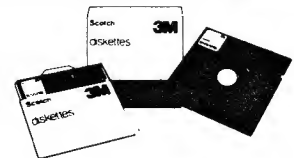
The Accounts Receivable program sells for \$395, and is available through BPI Systems, 3423 Guadalupe, Austin, TX 78705. It requires an Apple IIe with 64K memory, two disk drives, Apple's 80-column text card, and 80-character printer. ■

Gregory R. Glau
Prescott, AZ

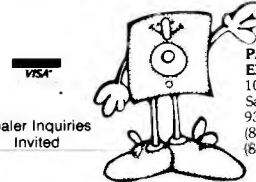
Circle 31 on Reader Service card.

Scotch® Diskettes

Rely on Scotch® diskettes to keep your valuable data safe. Dependable Scotch diskettes are tested and guaranteed error-free. The low abrasivity saves your read/write heads. They're compatible with most diskette drives.



(800)235-4137



Dealer Inquiries
Invited

**PACIFIC
EXCHANGES**
100 Foothill Blvd.
San Luis Obispo, CA
93401. In Cal. call
(800) 592-5935 or
(805) 543-1037.

Circle 367 on Reader Service card.

wabash®

six-year warranteed

DISKETTES!

\$18.95/box (10)

with FREE library case!

5¼" single-side, single-density; double-density add \$2/box. 8" disks comparably priced. Add \$2 per order shipping. In Illinois add 6% sales tax. Immediate shipment on VISA, Master Card or Money Order; Add 14 days for personal checks.

**CALL TOLL FREE
(800) 222-1248**

In Illinois Call (312) 882-8315

DEALERS! SCHOOLS! USER GROUPS!
Call for our low volume discount prices!

DIGITAL IMAGES

Box 941005, Schaumburg IL 60194



No Hidden Charges
No Charge for Credit Cards
No Shipping Delay for Personal Checks

SAVE!

ATARI SOFT

Centipede\$28.00
 Defender\$28.00
 Pac-Man\$28.00
 Robotron 2084\$28.00

AVALON HILL

T.A.C.\$28.00
 Telengard\$28.00

AVANT-GARDE CREATIONS
 Computer Golf 2\$25.00

BEAGLE BROTHERS

Alpha Plot\$28.00
 Apple Mechanic\$21.00
 Beagle Bag\$21.00
 Beagle Basic\$28.00
 DOS Boss\$20.00
 Double Take\$25.00
 Flex Text/Type\$21.00
 Frame Up\$21.00
 Pronto DOS\$21.00
 Tip Disk #1\$15.00
 Typefaces\$15.00
 Utility City\$21.00

BLUE CHIP

Baron\$42.00
 Millionaire\$42.00
 Tycoon\$42.00

BRODERBUND

A.E.\$25.00
 Bank Street Writer\$48.00
 Choplifter\$25.00
 Drol\$25.00
 Gumball\$21.00
 Lode Runner\$25.00
 Spare Change\$25.00

CALIFORNIA PACIFIC

Ultima/Akalabeth\$25.00

CBS SOFTWARE

Goren: Learning Bridge
 Made Easy\$56.00
 Mastering the SAT\$105.00
 Mystery Master\$25.00
 Success With Math\$20.00

DATAMOST

Aztec\$28.00
 Bileload\$28.00
 Casino\$28.00
 Swashbuckler\$25.00
 Thief\$21.00

DATASOFT

Zaxxon\$28.00

DECISION SUPPORT

The Accountant\$99.00
 Business Accountant\$225.00

DESIGN-WARE

Creature Creator\$28.00
 Crypto-Cube\$28.00
 Spellcopter\$28.00
 Trap-A-Zoid\$28.00

EDU-WARE

Algebra 1-4ea \$28.00
 Algebra 5 & 6\$35.00
 Compu-Read\$21.00
 Decimals\$35.00
 Fractions\$35.00
 Prisoner 2\$25.00
 Rendezvous\$28.00

EINSTEIN

Einstein Compiler\$99.00
 Memory Trainer\$68.00

DOW JONES & CO.

Dow Jones
 Connector\$ 40.00
 Investment
 Evaluator\$110.00
 Market
 Analyzer\$275.00
 Market Manager\$235.00
 Market
 Microscope\$559.00

H.A.L. LABS

Super Taxman 2\$20.00
 Vindicator\$20.00

HAYDEN SOFTWARE

Go\$25.00
 MicroMathea \$21.00
 ORCA/M\$99.00
 Pie Writer 2.2\$112.00
 Sargon III\$35.00

HOWARD SOFTWARE

Tax Preparer 1983\$169.00
 Tax Preparer 1984CALL

INFOCOM

Deadline\$35.00
 Enchanter\$35.00
 Infidel\$35.00
 Planetfall\$35.00
 Starcross\$28.00
 Suspended\$35.00
 Witness\$35.00
 Zork I, II, IIIea \$28.00

KOALA TECHNOLOGIES

Koala Touch Tablet\$89.00
 Coloring Book\$21.99
 Spider Eater\$21.00

KRELL SOFTWARE

Krell Logo\$75.00
 Krell SAT\$249.00

L & S COMPUTERWARE

Crossword Magic\$35.00

LIGHTNING SOFTWARE

Master Type\$28.00

MICROLAB

Death in Caribbean\$25.00
 Dino Eggs\$28.00
 Miner 2049er\$28.00

MICROMAX

Cubit\$28.00
 (Call for pricing on
 MICROMAX hardware)

MICROSOFT

MultiPlan\$175.00
 Olympic Decathlon\$21.00
 Typing Tutor II\$20.00

MONOGRAM

Dollars & Sense\$79.00

MUSE

Advanced Blackjack\$35.00
 Castle Wolfenstein\$21.00
 Caverns of Freitag\$21.00
 Eating Machine\$35.00
 Robot War\$28.00
 Super Text\$79.00

ODESTA

Chess 7.0\$49.00
 Checkers\$35.00
 Odin\$35.00

OMEGA MICROWARE

Chart Trader +\$149.00
 Inspector\$45.00
 Locksmith 5.0\$75.00
 Watson\$35.00

ORIGIN SYSTEMS

Exodus: Ultima III\$40.00

PENGUIN

Bouncing Kamungas\$15.00
 Comp. Graphics Sys.\$49.00
 Coveted Mirror\$15.00
 Crime Wave\$15.00
 Graphics Magician\$42.00
 Minit Man\$15.00
 Pensate\$15.00
 Pie Man\$15.00
 Quest\$15.00
 Short Cuts\$28.00
 Special Effects\$28.00
 Spy's Demise\$15.00
 Spy Strikes Back\$15.00
 Thunderbombs\$15.00
 Transylvania\$15.00

PHOENIX SOFTWARE

Masquerade\$25.00
 Sherwood Forest\$25.00

SCREENPLAY

Ken Uston's Professional
 Blackjack\$49.00

SENSIBLE SOFTWARE

Bookends\$99.00
 Sensible Speller\$99.00

SIERRA ON-LINE

Adv. #0 Mission
 Asteroid\$15.00
 Adv. #1Mystery
 House\$15.00
 Adv. #2 Wizard & the
 Princess\$25.00
 Adv. #3Cranston
 Manor\$25.00
 Adv. #4 Ulysses\$25.00
 Adv. #5 Time Zone\$70.00
 Adv. #6 Dark Crystal\$28.00
 Dragon's Keep\$21.00
 Frogger\$25.00
 Learning W/Leeper\$21.00
 Mr. Cool\$21.00
 Quest for Tires\$25.00
 Sammy Lightfoot\$21.00
 Troll's Tale\$21.00
 Ultima II\$42.00
 The Artist\$60.00
 Homeward\$37.00
 Screenwriter II\$89.00

SILICON VALLEY SYSTEMS

Word Handler\$45.00
 List Handler\$40.00
 Spell Handler\$45.00
 The Handlers Pkg.\$99.00

SIR-TECH

Wizardry\$35.00
 Knight of Diamonds\$25.00
 Legacy of Llylgamyn\$28.00
 Wizprint\$20.00

SIRIUS

Critical Mass\$28.00
 Gamma Goblins\$12.00
 Gorgon\$20.00
 Gruds in Space\$28.00
 Orbitron\$12.00
 Repton\$28.00
 Type Attack\$28.00
 Wayout\$28.00

SOFTWARE**ENTERTAINMENT**

Electronic
 Playground\$20.00
 Stellar 7\$28.00

SOFTWARE PUBLISHING

PFS: File\$95.00
 PFS: Report\$95.00
 PFS: Graph\$95.00
 PFS: Write\$95.00
 (Specify for II or Ite)

SPINNAKER

Alphabet Zoo\$21.00
 Delta Drawing\$35.00
 Face Maker\$25.00
 Kindercomp\$21.00
 Most Amazing Thing\$28.00
 Snooper Troopsea \$32.00
 Story Machine\$25.00
 Trains\$28.00

STRATEGIC SIMULATIONS

Bomb Alley\$42.00
 Broadbides\$28.00
 Carrier Force\$42.00
 Computer Ambush\$42.00
 Computer Baseball\$28.00
 Computer
 Quarterback\$28.00
 Cosmic Balanceea \$28.00
 Eagles\$28.00
 Fighter Command\$42.00
 Fortress\$25.00
 Galactic Adventures\$42.00
 Geopolitique 1990\$28.00
 Germany 1985\$42.00
 Knights of the Desert\$28.00
 North Atlantic '86\$42.00
 Prof. Tour Golf\$28.00
 RDF 1985\$25.00
 Ringside Seat\$28.00
 Tigers in the Snow\$28.00
 Warp Factor\$28.00

STONEWARE

DB Master V.4\$279.00

SUB-LOGIC

Flight Simulator II\$35.00
 Night Mission Pinball\$21.00
 Saturn Navigator\$25.00
 Space Vikings\$35.00

UTILICO SOFTWARE

Essential Data
 Duplicator\$60.00

ULTRASOFT

Mask of the Sun\$28.00
 Serpent's Star\$28.00

VISICORP

VisiCalc\$175.00
 VisiCalc II\$175.00
 VisiCalc Adv. II\$220.00
 VisiFile\$175.00

XEROX EDUCATION

Chivalry\$35.00
 Fat City\$28.00
 Old Ironsides\$28.00
 Stickybear ABC\$28.00
 Basketbounce\$28.00
 Bop\$28.00
 Numbers\$28.00
 Opposites\$28.00
 Shapes\$28.00

HARDWARE**JOYSTICKS AND**

PADDLES
 Hayes JoysticksCALL
 Kraft Joystick\$40.00
 Kraft Paddles\$35.00

MODEMS

Apple Cat II\$295.00
 Apple Cat 212\$580.00
 Micromodem II\$259.00
 (Works with all Apples)

PRINTER INTERFACES

Grappler +\$125.00
 Grappler/16K
 buffer\$199.00
 Orange Interface\$75.00

80 COLUMN CARDS

Ultratrim\$279.00
 VideotermCALL

BLANK DISKS (box of 10)

Elephant SS/SD\$22.00
 Elephant SS/DD\$25.00
 Maxell SS/DD\$30.00
 Verbatim SS/DD\$28.00
 Disk File Box
 (holds 80)\$20.00

MISCELLANEOUS

HARDWARE
 Alaska Card\$99.00
 Microsoft
 Softcard\$225.00
 System Saver\$65.00

RIISING SUN SOFTWARE
4200 PARK BLVD.
OAKLAND, CALIFORNIA 94602
(415) 482-3391

Ordering Information: We'll accept any form of payment—cash, personal check, money order, VISA/MasterCard, or C.O.D. Send cash at your own risk. Add \$2.00 for UPS shipping; \$3.00 for Blue Label Air. California residents add applicable sales tax. ALL orders shipped same day received. If we are out of stock on a particular item we will include a special bonus with your order when shipped.



CALL TOLL FREE
800-321-7770 (outside California)
800-321-7771 (inside California)



New Publications

edited by Joan Witham

Help for the Professional

Computers for Professional Practice (\$14.95) is a complete guide for dentists, physicians, accountants, lawyers and business people using computers in their offices. It is published by Andent Inc., 1000 North Ave., Waukegan, IL 60085.

Whole Earth Software Review

The Whole Earth Software Review (\$16 subscription) is a guide through the chaotic marketplace of software, hardware, books, dial-up services, etc. that add to the usefulness of computers. It offers software and product reviews, suggestions, comments and counsel from users. For further information, contact the Whole Earth Software Catalog & Review, 150 Gate Five Road, Sausalito, CA 94965.

Compare Computer Prices

Computer Price Alert (\$48 for 20 issues) is a guide to microcomputers and related products that compares prices on major brand items. It also offers a customized price research service. For more information, contact Computer Price Alert, PO Box 574, Cambridge, MA 02138.

Test Your Computer Law Literacy

Nolo Press, 950 Parker St., Berkeley, CA 94710, has released a book, *Legal Care for Your Software* (\$24.95), that will make you more aware of the laws protecting your software products.

Computers for Composition

Computers in Composition Instruction (\$6) is available from the International Council for Computers in Education (ICCE), University of Oregon, 1787 Agate St., Eugene, OR 97403. This 88-page booklet addresses specific concerns of educators teaching English composition using computers.

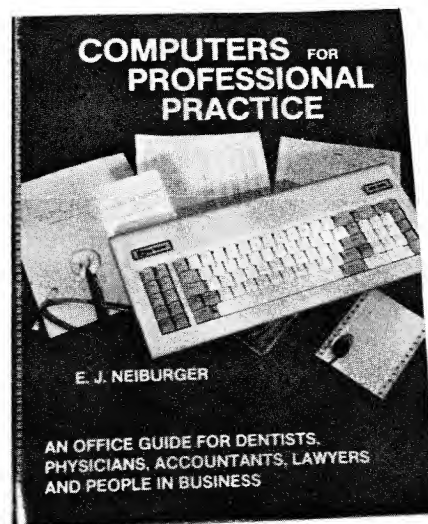
One-Stop Answer Book

The Whole Computer Catalog is a complete desk-top reference to the computer world, combining the description of fields and opportunities in the computer industry with the answers to questions that computer users have every day. It can be obtained for \$35 from Designs III Publishers, 515 W. Commonwealth, Fullerton, CA 92632.

Software Directory

Volume 7 of the *ICP Software Directory* (\$75) lists more than 5000 microcomputer products for business use. It is indexed five ways: by category, product, supplier, hardware product and category/product. Contact ICP World Software Information Center, 9000 Keystone Crossing, PO Box 40946, Indianapolis, IN 46240, for more information.

Product descriptions contained in this section are based on information supplied to us by the respective manufacturers. These announcements are provided solely as a service to our readers and do not constitute an endorsement by inCider of any given product.



**Hobbyists...
Professionals...
Businessmen...
Anyone who reads magazines...**

YOU NEED PRF!

PRF (Publication Recall Facility) allows you to store and retrieve magazine articles of interest to you. No more wasted time looking for that elusive article you remember "reading somewhere." With PRF your favorites are recalled at machine language speed according to user-defined subjects!

PRF has the features of an expensive data-base package at a fraction of the price.

PRF is completely menu driven and easy to use! Documentation included.

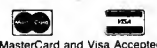
Requires: Apple II+ or Apple IIE, with 1 disk drive

SEND:
\$29⁹⁵

POST PAID
Maryland residents
add \$1.50 sales tax

TO: ALCO COMPUTING, INC.

P.O. BOX 26472
BALTIMORE, MARYLAND 21207
(301) 987-1831



Apple is a trademark of Apple Computer, Inc.

New Software

edited by Joan Witham

New Games from Sams

Three new games, \$29.95 each, are available from Howard W. Sams & Co., 4300 W. 62nd St., Indianapolis, IN 46268. *Regatta* simulates four different sailing races. One or two players can set sail and control the tiller to maneuver the course in record time.

In *Spud*, two players try to penetrate each other's protective shields with exploding potatoes. In *Mug Shot*, each player has a fort and a field of five mugs inside a trap; these mugs must be released and destroyed before they can destroy the player's fort. Reader Service number is 455.

Magic Office System

The Magic Office System, an integrated system for the Apple and Franklin computers, combines three full-function products: a

word processor, an electronic spreadsheet and a spelling checker. Parts of documents can be cut and pasted into other documents; this allows the user to copy a spreadsheet into a word processing document or move paragraphs from one file to another. Suggested retail price is \$295 from ARTSCI Inc., 5547 Satsuma Ave., North Hollywood, CA 91601. Reader Service number is 450.

What Are the Odds?

For the sports minded, the OddsMaker calculates the probabilities of a winner with any given statistics. It will accept wagers, calculate odds, total pools, calculate pay-outs, print tickets and even take a house cut. The program is menu driven and user friendly. OddsMaker is available for \$44.95 from CZ Software, 358 Forest Road, So. Yarmouth, MA

02664. Reader Service number is 458.

Challenging Educational Games

Edu-Cave provides multi-subject learning experiences in a challenging game atmosphere for \$29.50. *Math Alert!* (\$19.50) offers a topic tutorial session before each practice session. Contact Micro Program Designs, 5440 Crestline Road, Wilmington, DE 19808, for more information. Reader Service number is 466.

Vocabulary Machine

The Vocabulary Machine contains more than 1000 words and sentences to expand reading vocabulary skills in grades 1-12. Text is displayed in upper- and lowercase and each word can be accompanied by a hi-res graphics picture. The suggested retail



Sail computer races with *Regatta*.

price is \$59.95 from South-West EdPsych Services, PO Box 1870, Phoenix, AZ 85001. Reader Service number is 454.

Bar Mitzvah Tutor

The Bar Mitzvah Computer-Tutor offers a personalized study course to help Jewish young people prepare for a bar or bat mitzvah. The computer incorporates the English and Hebrew names of the student and the specific



Mash your opponent with *Spud*.

Product descriptions contained in this section are based on information supplied to us by the respective manufacturers. These announcements are provided solely as a service to our readers and do not constitute an endorsement by inCider of any given product.

Travel With Your Apple... Call (800) 847-4176!



ABS Storage
& Carrying Case
with
Removable Cover
\$69.50*

*UPS Shipping Included.

Apple • IBM • Epson

Call for Complete Computer Case Catalog.
Credit Card Customers Call Toll Free

Fiberbilt

Ikelheimer-Ernst, Inc.
601 West 26th Street
New York, New York 10001-1199
(212) 675-5820 (N.Y. State)



Gladly accepted

PUT YOUR APPLE TO WORK

GET WORK FORCE II.™

A collection of 6 new ultra-friendly programs.

1. THE LOAN ANALYZER
loan and mortgage amortization, balloon payments.
2. THE CALCULATOR
4 function printing calculator with memory & %.
3. THE LINE WRITER
a line-at-a-time correctable typewriter.
4. THE SAVING ANALYZER
analyzes future value of savings, investments, & rates.
5. THE WAGE ANALYZER
examines your income and pay raises.
6. THE BALANCING ACT
once a month checkbook balancing.

ALL SIX ONLY \$29.95

Manual & Shipping Included

Our Software is Copyable & Affordable, *Insist On It!*

Requirements: Apple IIe, II+, or II with 48k, printer optional.
Apple, Apple II, II+, and IIe are trademarks of Apple Computer, Inc.

Please send me _____ copies of WORK FORCE II at \$29.95 each.
☐ check or money order. ☐ American Express ☐ COD (add \$3.00 for COD)
Arizona residents add 6% Sales Tax. Overseas add \$4.00.

Card # _____ (15 digits)

Signature _____ Valid From _____ to _____

Name _____ Phone _____

Address _____

City/State/Zip _____

Mail To: **Core Concepts**
P.O. Box 24157 Tempe, AZ 85282
(602) 968-3756
DEALER INQUIRIES INVITED



All orders shipped immediately!

DIVERSI-DOS IS THE BEST

*** NEW *** NEW *** NEW ***

TLIST — Lists BASIC files without destroying the program in memory. Use TLIST to copy lines from one program to another / Improved list format without indents, for easier editing / Visible control characters / Also lists program in memory with improved format

Insert/Delete Mode — Makes program editing a pleasure! Insert characters in the middle of a line without re-typing. Also works for data entry!

Keyboard MACROS — Enter whole phrases with a single keystroke! Make your own custom editing keys, or redefine your entire keyboard (Dvorak keyboard included)

Wildcard file names — Enter only the first few letters of a file name (searches the directory for a match)

BSAVE — "A" and "L" parameters are not necessary (uses "A" and "L" from last BLOAD)

Recognizable ESCAPE and INSERT mode cursors

Lowercase DOS commands accepted

Catalog abort key

Lists text files to screen or printer

"Of all the DOS enhancement packages reviewed in Peeling II to date, DIVERSI-DOS is the most powerful in terms of its capabilities coupled with its price. DIVERSI-DOS is the only product to speed up all areas of DOS—LOAD/BLOAD, RUN/BRUN, SAVE/BSAVE, as well as the READ and WRITE of text files...The documentation is superb. (Rating AA)"
— Peeling II Magazine

WHAT ARE YOU WAITING FOR???

Are you tired of waiting for DOS to load and save files? Are you tired of waiting for DOS to finish so you can type again? Are you tired of waiting for your printer? When you buy **DIVERSI-DOS™**, by Bill Basham, you won't have to wait any more! Here's why:

1. **DOS speed-up:** Apple DOS 3.3 takes 18 disk revolutions to read a single track, whereas **DIVERSI-DOS** reads or writes a track in just 2 revolutions. This speeds up file processing tremendously (see table).

2. **Keyboard Buffer:** **DIVERSI-DOS** allows you to type ahead, as fast as you can, without missing a single character.

3. **Print Buffer:** **DIVERSI-DOS** can use a RAM card (16K-128K) to temporarily save characters before they are printed. Thus, your computer won't have to wait for your printer to finish.

4. **DDMOVER:** **DIVERSI-DOS** can now be moved to a RAM card to increase the available memory in a BASIC program.

DIVERSI-DOS, the **QUADRUPLE** utility, requires a 48K Apple II, II+ or IIe with DOS 3.3. A simple, menu-driven installation program is included on the un-protected disk. So what are you waiting for?

	APPLE DOS	DIVERSI-DOS
SAVE†	27.1 sec.	5.9 sec.
LOAD†	19.2 sec.	4.5 sec.
BSAVE*	13.6 sec.	4.1 sec.
BLOAD*	9.5 sec.	2.6 sec.
READ**	42.2 sec.	12.4 sec.
WRITE**	44.6 sec.	14.9 sec.
APPEND**	21.3 sec.	2.3 sec.

*Hi-res screen †80-sector BASIC program

** 52-sector text file

ORDER TOLL-FREE

Call NOW: 800 835-2246 ext. 127 (orders only)
For information, call 815 877-1343
Disks normally shipped within 24 hours.
Only \$30: Includes 1st class or foreign airmail.
Sold by mail order only.
Return in 30 days for full refund, if not totally satisfied!

FREE — with your order — **FREE DOGFIGHT® II** — By Bill Basham
— A special mail-order version of the arcade game for 1 to 8 players, recently listed #6 on the best seller list!

Send \$30 (U.S. funds) to:
Diversified Software Research, Inc.
5848 Crampton Court
Rockford, Illinois 61111

dsr

Name: _____

Address: _____

City: _____

State: _____ Zip Code: _____

Visa/Mastercard, C.O.D. or personal check accepted.

Card #: _____

Exp. Date: _____

C

SIMPLY THE BEST

IN DIAGNOSTICS
(For Apple® II and IIe)

XPS-Diagnostic II & IIe



There's no diagnostic program more comprehensive or easier to use than an XPS-Diagnostic. Each program comes complete with a simplified user manual, **back-up disk** and **lifetime warranty**.

XPS-Diagnostic tests all major functions of your Apple II or IIe system with minimal user input...and it **speaks your language**.

XPS-Diagnostic II and IIe require DOS 3.3 Version II requires 48K.

Tests Include:

MAIN MEMORY	KEYBOARD	MONITOR TESTS
SYSTEM ROMS	PRINTER	GAME PORT
• LANGUAGE CARD	CPU	••80 COLUMN CARD
DISK SYSTEM	PERIPHERALS	••AUX. MEMORY
DRIVE SPEED		MEDIA VERIFY

•XPS-Diagnostic II only

••XPS-Diagnostic IIe only

XPS-Diagnostic II or IIe: \$49.95

(Please specify system. PA residents add 6% sales tax. No charge for shipping or handling.)

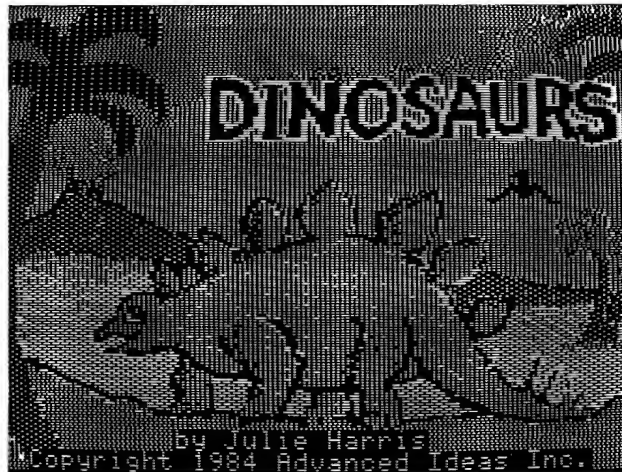
To order and/or receive more
information call XPS: (717) 243-5373



XPS, Inc.
P.O. Box 140
Carlisle, PA 17013

Apple® is a registered trademark of Apple Computer Inc.

New Software



Dinosaurus come to life.

Haftarah to be read. It is available for \$49.95 from Davka Corp., 845 N. Michigan Ave., Suite 843, Chicago, IL 60611. Reader Service number is 465.

Educational Options

Dinosaurus, from Advanced Ideas, teaches preschoolers the visual recognition skills necessary for matching, sorting and counting objects. Another program, Lucky's Magic Hat, develops reading comprehension, sequential thinking and memory skills. Each program sells for \$39.95 from Advanced Ideas, 2550 Ninth St., Suite 104, Berkeley, CA 94710. Reader Service number is 463.

Electronic Filing

Bluebush Inc. announces Speed File, an entry and retrieval software filing package for \$125. It files, sorts, organizes and "remembers"

the way people do—by name, phrase, date, address, or anything—even if only partial retrieval requests are made. There are no command structures to learn—all options are selected with cursor movements. Other features include 53K byte storage capacity with language card, optional password protection and automatic double recording of data. For further information, contact Bluebush, 3379 St. Mary's Place, Santa Clara, CA 95051. Reader Service number is 452.

Perplexed?

Based on classic puzzles, Perplexity's three puzzles encourage players to develop and use their logic and problem-solving skills. Each move is graphically shown on the computer screen, so the effect of every decision is immediately apparent. Perplexity is available for \$29.95 from Daybreak Software, 1951 Grand Ave.,



A medieval adventure with the Sorcerer of Claymorgue Castle.

Baldwin, NY 11510. Reader Service number is 457.

The 13th Adventure

Adventure International has released *Sorcerer of Claymorgue Castle* (\$24.95), an adventure with a medieval magic theme. The player is encouraged to become Beanwick, faithful apprentice of Solon, the Master Wizard, and search for the 13 Stars of Power. Contact Adventure International, Box 3435, Longwood, FL 32750, for further information. Reader Service number is 462.

Word Games

Three games help students improve their vocabulary and prepare for the SAT and similar examinations. The two vocabulary games use a high resolution baseball format, and the Antonym Game uses an automobile racing format. Both the Antonym Game and the senior level Vocabulary Game are designed for students in grades 10-12; the junior level Vocabulary Game is designed

for students in grades 5-8. Each game sells for \$29.50 from J & J Software, 140 Reid Ave., Port Washington, NY 11050. Reader Service number is 451.

Pascal for the Apple

This new software/book package, *Pascal for the Apple* (\$33), features the Apple Turtlegraphics package, 23 ready-to-run sample and explanatory programs with 200 exercises, an Apple Pascal operating system summary and Pascal procedures, iteration, decision-making and recursion. Contact Prentice-Hall Inc., Englewood Cliffs, NJ 07632 for more information on this Pascal tutorial. Reader Service number is 449.

Three Files in One

The new Transend Version 5.0 data communications package allows users to transfer all three file types—ProDOS, CP/M and Pascal files—in one package. Transend 1 (\$89) is data capture terminal communications software for the Apple computer; Transend 2 is the same plus er-

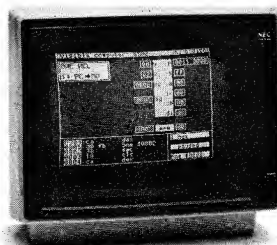
You don't need to be a genius to learn machine language.

....

Just smart enough to get The Visible Computer: 6502.

Since its introduction 18 months ago, The Visible Computer: 6502 has become *the* way to tackle machine language.

From the press came rave reviews. *Incider*: "TVC is excellent." *Learning Computing* named it one of the best



It's an animated simulation of the 6502 micro processor that lets you see with your own eyes how the 6502 works.

programs of 1983. *Peelings* magazine said: "The explanations are truly excellent, being that rare combination: correct and intelligible."

Basic programmers everywhere are discovering that the only mystery about machine language is why no one ever taught it this way before.

Now, better than ever. For a limited time, get a free copy of the ASSYST Editor-Assembler with every purchase of TVC: 6502. For less than the price of most assemblers alone, TVC teaches you machine language — and gives you the tools you need to write programs.

It's a tutorial. The 200 page manual is more than just instructions on running the simulator — it may just be the best book on machine language ever written.



It's 30 demonstration programs you'll work through with the 6502 simulator.

Software Masters™

For Apple II Plus and IIe, \$49.95 from your dealer or direct from Software Masters, 3330 Hillcroft, Suite BB, Houston, Texas, 77057. (713) 266-5771. Bank cards accepted. Mail orders please enclose \$3.00 shipping.



DISK FILE MANAGER

LOOK AT THESE FEATURES!

- May be used as your Hello program.
- DOS Commands (LOAD, RUN, EXEC, LOCK, RENAME, etc.).
- Easily copies files and/or disk.
- Increase disk storage capacity by freeing up to 40 unused sectors—including the 36th track.*
- Sort catalog files by file type, sectors, or alphabetically in ascending or descending order, with optional write to disk.
- Restores deleted files.
- All commands are easily executed with a minimum of keystrokes.
- Fully Menu Driven
- DIVERSI-DOS† compatible.

NOW ONLY

\$25.00

*Some drives cannot use the 36th track

Add \$1.50 Shipping & Handling

See your local dealer
or order direct from:

Accepted

J & M SOFTWARE

Dept. C

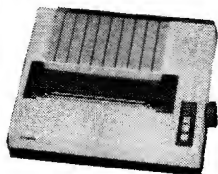
P. O. Box 2132
Athens, Texas 75751
(214) 675-8479

Program for Apple II+, IIe*
48K and DOS 3.3 with disk drive
Disks are not locked

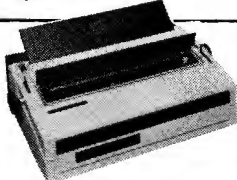
*Apple is a registered trademark of Apple Computer, Inc.

†DIVERSI-DOS is a trademark of Diversified Software Research, Inc.

Large Selection - BIG Savings



Epson \$CALL

CITOH Prowriter \$359
CITOH Prowriter II \$565Silver Reed EXP500 \$425
Silver Reed EXP550 \$515

Okidata \$CALL

PRINTERS

Star Gemini 10X	\$289
Star Delta-10	415
Star Gemini 15X	409

MONITORS

Amdek Color I+	299
BMC Color	255
BMC Green	99
Taxan Green	130
Taxan Amber	139

MODEMS

Hayes Micromodem IIE	225
Smartmodem 300	225
Smartmodem 1200	539

Novation J-Cat	115
Smartcat 1200	410
Apple Cat II	255

MISC.

Grappler+ Card & Cable	139
Grappler+ (16K Buffer)	199
Tymac Card & Cable	99
Printer Stand	25

RADIO SHACK COMPUTERS

Model 4 Portable	1525
64K 2 Drives	679
Model 100 8K	679
Model 100 24K	835

CALL TOLL FREE
1-800-343-8124

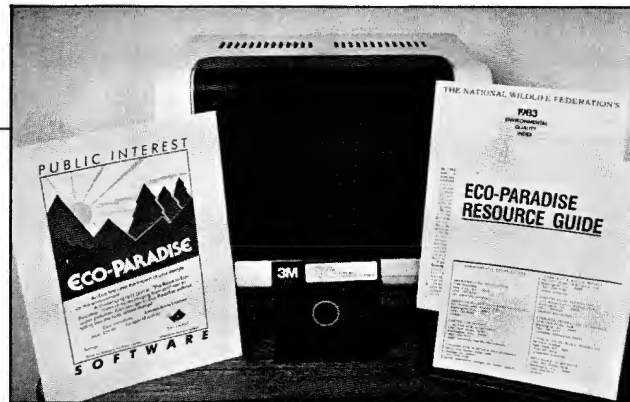
- LOWEST POSSIBLE PRICES
- BEST POSSIBLE WARRANTY
- KNOWLEDGEABLE SALES STAFF
- TIMELY DELIVERY
- SHOPPING CONVENIENCE



computer plus

P.O. Box 1094
480 King Street
Littleton, MA 01460
SINCE 1973
IN MASSACHUSETTS CALL (617) 486-3193

New Software



Eco-Paradise challenges your environmental awareness.

ror-free file transfer for \$149; Transend 3 includes 1 and 2 plus unattended electronic mail for \$275. For further information, contact Transend Corporation, 2190 Paragon Drive, San Jose CA 95131. Reader Service number is 461.

The Secret of Deductive Reasoning

Learn how to form and test hypotheses in Zandar, a software program developed under a contract with the U.S. Department of Education. In the first disk, students are guided through the steps of the hypothesis-testing strategy as they eliminate false clues to discover Zandar's secret. As they progress, players are rewarded with a wizard's robe, cap and wand. In the second disk, students gather information, form hypotheses, test and alter them as needed without the program's assistance. The price for the complete package is \$120 from the Society for Visual Education Inc., Dept. 71672, 1345 Diversey Parkway, Chicago, IL 60614. Reader Service number is 460.

Apples and the Environment

The Center for Science in the Public Interest, a

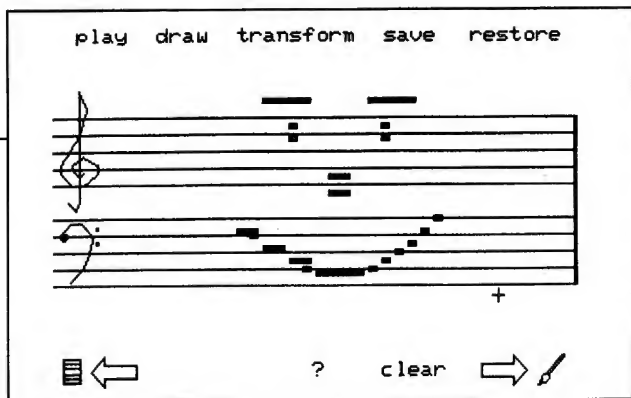
non-profit citizens' group that advocates improved nutrition and environmental policies, has produced Eco-Paradise to educate the general public.

Eco-Paradise (\$39.95) consists of two programs that use a quiz-game approach to teaching about the environment and ecology. The Road to Eco-Paradise challenges you to travel from the City of Darkness to Eco-Paradise without falling into the toxic waste dump by answering questions about ecology, pollution, and environmental politics. Eco-Test asks questions about your habits around the house, use of a car, food purchasing, etc., to rate your impact on the environment.

For further information, contact The Center for Science in the Public Interest, 1755 S St. N.W., Washington, DC 20009. Reader Service number is 468.

Educational Activities

Based on Logo philosophy and Piaget's research, 20 computer activities develop mathematical, logical and communication skills in the Early Childhood Learning Program. Discovery and exploration methods teach letter and number recognition, direc-



Musicland uses computer graphics.

tionality, decision making, spelling, and other skills to ages 3-7. The program retails for \$34.95 for one disk and \$149 for the full program of five disks.

Diascriptive Reading I diagnoses the reading skills of each child, prescribes what is needed for improvement, then evaluates and keeps track of performance at each level. Animated graphics reward or instruct students and reinforce what they've learned. The set of six disks is available for \$295 from Educational Activities Inc., PO Box 392, Freeport, NY 11520. Reader Service number is 456.

Unique Plotter Software

Sign-Plot from Centerpoint produces six different letter font styles with type-set quality. Additional fonts or symbols can create custom applications. Sign-Plot is menu driven and requires a CP/M card. Priced at \$149, it is available from Centerpoint Computer Applications, 500 N. Michigan Ave., Chicago, IL 60611. Reader Service number is 467.

Musical Adventure

Musicland (\$150) is a set of four musical games that integrates the kinesthetic,

visual and the aural senses. Presented in game form, Musicland maintains the interest of young students while providing musical challenges for adult musicians. Users can compose, edit and play music, as well as design original sounds. Musicland requires a 64K Apple and the Mountain Computer Music System. Contact Syntauri Corp., 4962 Camino Real, Suite 112, Los Altos, CA 94022, for further information. Reader Service number is 453.

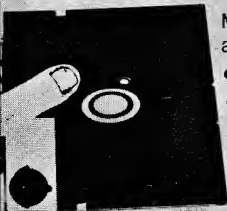
Mainframe Database Power

Aladin is a menu-driven integrated relational data base management system that incorporates calculation, statistics and graphics capabilities and interfaces with programs such as WordStar and VisiCalc. Compatible with Apple Pascal, it requires 64K RAM and two disk drives for Apple II version (\$595). The Apple III version (\$795) requires a hard disk and 256K RAM. For further information, contact A.D.I. America, 1215 Howe Ave., Sacramento, CA 95825. Reader Service number is 459.

An Intelligent Tutor

Intelligent Software Inc.,

*REDUCES DISKETTE COST 50%!



Make use of the back of your 5 1/4" Diskettes and SAVE

- **NIBBLE NOTCH** tools make it easy.
- Adds the precise notch where you need it.
- Doubles diskette space or **MONEY BACK!**

NIBBLE NOTCH I

Cuts square notch for Apple, II, II+, IIe, III, Franklin and Commodore.

only **\$14.95** each

add \$1.50 each P&H (\$4.50 each foreign P&H)

DISK OPTIMIZER® SYSTEM

SOFTWARE FOR APPLE, II, II+, IIe, III & Franklin

- **469% FASTER** Than Similar Programs!
- Certifies your "new" disk 100% Error Free
- Removes Bad Sectors • Adds 36th Track
- Performs Disk Drive Speed Check
- Adds DOS and More

only **\$24.95** each

add \$1.50 each P&H (\$4.50 each foreign P&H)

— OR BUY BOTH —

only **\$29.95**

add \$2.50 each set P&H (\$6.50 foreign P&H)

Florida Residents Add 5% Sales Tax

SATISFACTION GUARANTEED OR YOUR MONEY BACK!

ORDER TODAY!

SEND CHECK OR MONEY ORDER TO:

NIBBLE NOTCH COMPUTER PRODUCTS
DIVISION OF CORTRAN INTERNATIONAL

4211 NW 75th TERRACE • DEPT. 2 1 • LAUDERHILL, FL 33319
PAT. PEND. ALL TRADEMARKS ARE ACKNOWLEDGED

Circle 306 on Reader Service card.

GRAPHICS TIPS DISK

INCLUDES:

- ☐ Sketching Programs.
- ☐ Screen Dumps for Apple* Dot Matrix and Epson MX-80 Printers.
- ☐ Tips on Shape Tables.
- ☐ Tips on Manipulating Screens.
- ☐ Send \$17.95.

MICROTUTOR

- ☐ Create and Present Your Own Instructional Materials.
- ☐ Only \$59.00.

ARITHMETIC

- ☐ Drill and Practice at Your Chosen Level and According to Your Specifications.
- ☐ Priced at \$19.95.



LOCUS
SYSTEMS

P. O. BOX 248
WILKESBORO, NC 28659
(919) 838-4166

DEALER INQUIRIES WELCOME

*APPLE II DOS 3.3
48K Memory
1 or 2 Disk Drives

INCLUDE \$2.00 FOR SHIPPING
(NC RESIDENTS ADD 4 1/2% SALES TAX)

*APPLE is a Registered Trademark of APPLE COMPUTER, INC.

COOL-AIDE™

**SUPER COOLING FAN
TRANSIENT VOLTAGE PROTECTION
RFI/EMI FILTERING
FOR APPLE II* COMPUTERS**

\$59.95



Features

- Thin, compact design, easy installation, just clips on
- Compatible with Apple standard computer case
- Entire system controlled by front power switch, 120/60 operation
- Internal voltage surge protection & RFI/EMI filtering
- Power indicator light & dual auxiliary outlets
- Quiet and efficient operation
- Reduce heat build up, moves 37 CFM of air

Also available from Kalglo Electronics Co. Inc.:

AEGISTM Power Conditioning Equipment

SPIKE-SPIKER[®] - Transient voltage protectors & noise filter
from \$34.95-\$94.95

LINE-SAVER™ - Uninterruptable Power Systems - from \$395.00

SEND FOR FREE LITERATURE



6584 Ruch Rd., Dept. I
Bethlehem, PA 18017

DEALER/ODM INQUIRIES INVITED

*Reg. trademark of Apple Computers Inc.

Use your credit card or send check
and we pay shipping
Out of state, order toll free
800-524-0400 TWX 510-651-2101
215-837-0700

Pa. Res. add 6% sales tax
for COD add \$3.00 + shipping

APPLE CPM UTILITY PAK #2

\$39

Two of CP/MUG's most useful CP/M tools at a bargain price:

- A powerful and flexible 8080 DISASSEMBLER - binary file in, source file out!
 - An excellent DISK ZAP (inspect-and-change) utility - for any Apple disk-type device!
- UTILITY PAK #2 includes our own detailed user manual which provides in-depth tutorials on the art of disassembly and the mysteries of Apple CP/M file and diskette formats (recover erased files, blown diskettes, garbaged directories, etc.). You'd pay twice this price for each utility (without tutorials) elsewhere.

APPLE CPM UTILITY PAK #1

\$39

Nine CP/MUG utilities adapted and documented (40 pages!) specifically for Apple CP/M:

- Extended DIRectory (with file sizes and sort and attribute selection options)
- Multi-Diskette Volume CATALOGer
- BATCH CP/M commands on one line
- Conditional SUBMIT file processing
- LIST selected PARTS of a text file
- Single Drive File COPY
- COUNT text file lines
- Sort And Pack diskette directory
- LISTFILE (numbers & separates pages)

Pascal/CPM/DOS FILE TRANSFER UTILITIES

\$45

Move your Pascal text files to CP/M or Pascal for editing, move DOS data to CP/M or Pascal for processing with high level languages, etc. FTU consists of six programs to transfer any file among the Apple DOS, CP/M, and Pascal operating system environments. Allows a single disc to hold files for all three systems.

CLOCKWARE

\$25

Provides access from Pascal programs to all time and date setting and reading functions of Prometheus Versacard and other Thunder-type clock calendars in any slot (1-7). Includes SYSTEM. STARTUP programs to set the system date at bootup, demo programs, and a complete and informative user manual.

APPLE II ↔ IBM PC FILE TRANSFER SERVICE

Write for information and pricing

SEE YOUR DEALER OR ORDER DIRECTLY (VISA/MasterCard ACCEPTED) FROM:

RCM SOFTWARE

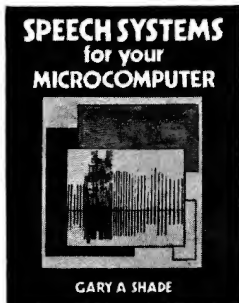
4608 Renwood Drive • Kettering, Ohio 45429

Circle 110 on Reader Service card.

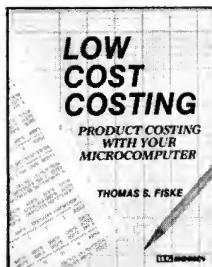
BOOKS

Wayne Green Books

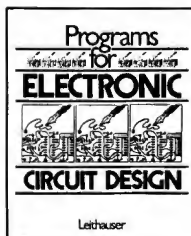
BOOKS



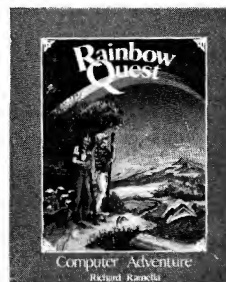
Speech Systems for Your Microcomputer
A solid introduction to voice technology. For industry, education, or home use, this book presents many examples of voice input/output using microcomputer systems. Includes buyer's guide, along with over 100 pages of manufacturer's data sheets, with companies' addresses and phone numbers. **\$14.95, BK7406, 254 pp., NEW.**



Low Cost Costing
Product Costing with Your Microcomputer
Low Cost Costing can save small businesses thousands of dollars. Step-by-step instructions help decision makers find product costs by using profit and loss statements and a microcomputer. All the programs are included on the disk that comes with the book. For the Apple II, II+, IIe. **\$24.95, CC7399, 94 pp.**



Programs for Electronic Circuit Design
Electronics engineers and hobbyists will welcome this guide to electronic circuit design with a microcomputer. Each chapter contains a program you can use in selecting values for electronic circuits. Book and disk for Apple II, II+, and IIe sold together. **\$24.95, CC7409, 128 pp., NEW.**



Rainbow Quest
Rainbow Quest combines fiction and computer programs to form one giant fantasy for young readers. On the Rainbow Quest, Molly and Sam must pass a series of tests in order to succeed. The reader gets involved by taking each test on the computer. Included are mazes, number quizzes, logic tests, word puzzles, and arcade-style games. Book and disk for Apple II, II+, and IIe sold together. **\$24.95, CC7407, 120 pp., NEW.**



Nanos System Reference Cards
No more flipping through the Apple manuals to find information you need. Nanos System Reference cards are pocket-sized summaries for your quick, easy reference. Find such information as BASIC commands and instructions, ROM routines, and reserved words.
Apple II & Apple II+, BASIC, FC1007, \$3.95
Apple II & Apple II+, BASIC & 6502, FC1008, \$4.95
6502 Microprocessor, FC1016, \$4.95
Apple IIe Microcomputer, FC1021, \$5.95

For credit card orders, call toll-free, 1-800-258-5473. Or send your order on a separate piece of paper to: Wayne Green Books, Retail Sales, Peterborough, NH 03458. Be sure to include the book title, order number, and price. Postage and handling is \$1.50 for the first book, \$1.00 for each additional book. Foreign air mail is \$10.00 per book. Check, money order, or complete credit card information must accompany your order. Orders payable in US dollars only. Please allow 4-6 weeks for delivery. If you have any questions about your order, write customer service at the above address.

9609 Cypress, Munster, IN 46321, has announced a series of educational software packages for high school math subjects. Each package helps students identify their areas of strength and weakness, then provides practice for a wide variety of problems. The packages are SAT Math (\$69.95), and Algebra 1, Algebra 2, Geometry, and Trigonometry and Advanced Topics (\$49.95 each). Reader Service number is 469.

Brainstormer

Brainstormer provides both a structure for describing problems and a process for finding solutions. The user goes through

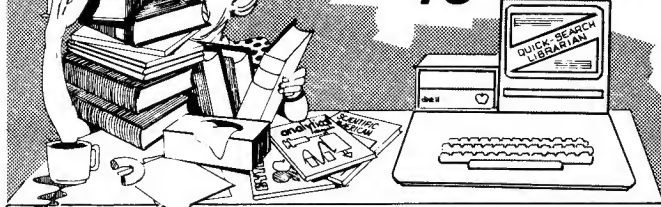


Turn your problems around.

a series of steps to produce a structured representation of a problem. Then Brainstormer guides the user through examination and reconsideration of the structure by generating new ways of looking at the problem. The program is available for \$60 for an Apple with a CP/M card. For further information, contact Soft Path Systems, Cheshire House, 105 N. Adams, Eugene, OR 97402. Reader Service number is 464.

Circle 204 on Reader Service card.

BURIED IN STACKS OF ARTICLES ? CONSIDER HIRING A LIBRARIAN FOR ONLY \$ 75



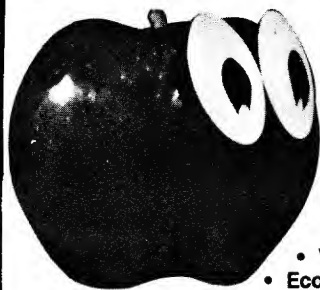
Quick Search Librarian (QSL) makes it easy to enter and edit your journal references, search for articles, and print or sort a list of articles using the 48K APPLE* II + computer. Important QSL features include:

- Two keystrokes select any one of 255 keywords or any one of 255 journal titles.
- Four lines available for listing authors, title and/or comments.
- Powerful data base screen editing, copying and merging features.
- Average search speed is 50 articles/second with multiple criteria; average sorting speed is 40 articles/second when sorting on 3 fields.
- Typically, 1000 articles can be stored on a single disk.
- Includes sample data base and tutorial for *Scientific American*, 1981.

VISA or Mastercard orders accepted. QSL manual available separately for \$5. (Price of manual deductible later with purchase of QSL software.) Add \$1.50 for shipments made in U.S.A.

* Trademark of Apple Computer, Inc.

iwi INTERACTIVE MICROWARE, INC.
P.O. Box 771, Dept. 52
State College, PA 16801, (814) 238-8294



LET YOUR APPLE SEE THE WORLD!

The DS-65 Digisector® opens up a whole new world for your Apple II. Your computer can now be a part of the action, taking pictures to amuse your friends, watching your house while you're away, taking computer portraits . . . the applications abound! The DS-65 is a random access video digitizer. It converts a TV camera's output into digital information your computer can process. The DS-65 features:

- **High Resolution** — a 256 x 256 picture element scan
- **Precision** — 64 levels of grey scale
- **Versatility** — Accepts either NTSC or industrial video input
- **Economy** — A professional tool priced for the hobbyist

The DS-65 is an intelligent peripheral card with on-board software in 2708 EPROM. Check these software features:

- Full screen scans directly to Apple Hi-Res screen
- Easy random access digitizing by Basic programs
- Line-scan digitizing for reading charts or tracking objects
- Utility functions for clearing and copying the Hi-Res screen

Use the DS-65 for precision security systems; computer portraiture; robotics; fast to slow scan conversion; moving target indicators; reading UPC codes, musical scores and paper tape and more! **GIVE YOUR APPLE THE GIFT OF SIGHT!** DS-65 Price: \$349.95 RCA 1500 Series Camera w/6:1 zoom lens Price: \$399.90/Combination Price: \$729.95

ADDITIONAL SOFTWARE FOR THE DS-65

— **Picture Scanner:** An applications tool for processing video images for display on the Hi-Res screen. A variety of dithering algorithms are provided, for compressing the digitized image into the Hi-Res screen and simulating grey scales. Price: \$39.95

— **Superscan:** Enables you to enhance the DS-65's Hi-Res pictures with colors! Choose from 21 different colors and assign them to grey scale values, modify pictures, zoom, enhance contrast, etc. Includes print routines for Anadex 9500 or 9501; Epson MX-80GFT and MX-100; and IDS 460 Paper Tiger*. Written for The Micro Works by Magna Soft. Price: \$79.95

*Paper Tiger is a trademark of Integral Data Systems, Inc.

THE **MICRO
WORKS**

Now for IBM PC!

California Residents add 6% Tax

Mastercard/Visa Accepted

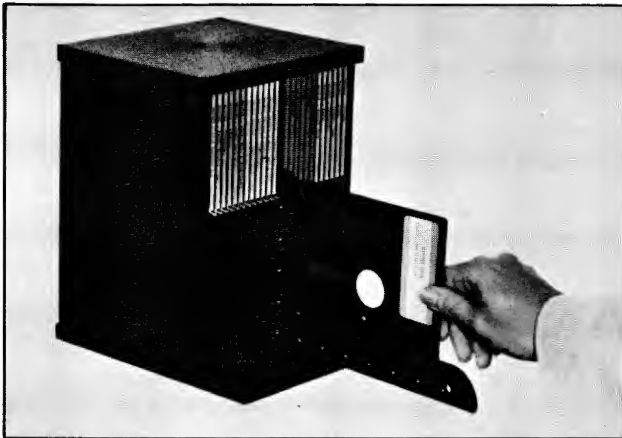
P.O. BOX 1110 DEL MAR, CA 92014 619-942-2400



HI-RES PICTURE USING THE DS-65
AND PICTURE SCANNER SOFTWARE

New Products

edited by Joan Witham



Flexible disk file holds 25 disks.

Flexible Filing

A Flexible Disk File made of antistatic plastic, stores 25 5 1/4-inch disks, protecting them from becoming warped, scratched, touched or damaged. The file retails for less than \$40 from Eddie Goodwin Co., PO Box 470331, Miami, FL 33147. Reader Service number is 482.

Speedy Plotter

A fast (31.5 ips plot speed and 6 g acceleration) plotter has been introduced by Hewlett-Packard Company. The HP 7550A Plotter also features a liquid-crystal display with function keys, 11" x 17" surface, cut-sheet paper feed and a REPLOT feature that draws up to 99 copies of an original graph without rerunning the program. It is available for \$3900 from Hewlett-Packard Company, 1820 Embarcadero Road, Palo Alto, CA 94303. Reader Service number is 470.

Saybrook II

Saybrook II, a 68000 32/16 bit co-processor for

the Apple II/IIe, runs Apple Pascal, Apple Fortran and Apple Basic programs 10-30 times faster with twice the memory on board. The Base System includes 128K RAM, UCSD p-System Runtime Unit Version IV.13, Applesoft-compatible 68000 Basic, Turtlegraphics, a clock and five programmable timers. The board is available in 8 (\$895), 12.5 (\$1195) or 14 MHz (\$1395).

The Advanced System includes the Base System plus one compiler, the EDVANCE Screen Editor,

Saygraphics Graphics Package and the Phase-0 Cross Assembler. The Advanced System sells for \$995 (8 MHz), \$1295 (12.5 MHz) and \$1495 (14 MHz). Each additional compiler costs \$95. For more information, contact Analytical Engines Inc., 3415 Grey-stone, Suite 305, Austin, TX 78731. Reader Service number is 474.

Protection Pad for Your Apple

3M Static Control Systems makes a desktop computer protection pad to solve the problems of video interference, memory loss, mechanical malfunction and downtime caused by static discharge. The 24" x 26" First Touch Series 9200 Static Control Computer Pad protects by draining static charge from operator to ground in less than half a second. It also resists alcohol, water, coffee and food spills and can be easily cleaned. The suggested retail price is \$69.95. Contact 3M, Department DR83-26, Box

33600, St. Paul, MN 55133 for more information. Reader Service number is 471.

The Apple/IBM Connection

Apple Computer now offers a coaxial attachment unit called AppleLine (\$1295), connecting Apple computers to an IBM or IBM-compatible network.

Access 3270 (\$150) software gives Apple III users access to IBM mainframe and mini computers by emulating IBM 3278 terminals. In most cases the user can simply unplug the terminal and replace it with an Apple computer.

The Apple Cluster Controller can link an Apple computer directly to the network or via a modem. It is available for \$4500 for a three-port version and \$7000 for a seven-port version. For further information on any of the above products, contact Apple Computer, 20525 Mariana Ave., Cupertino, CA 95014. Reader Service number is 479.

Cut-Sheet Feeders

Vivitar Computer Products Inc. has introduced a full line of cut-sheet feeders for under \$400. Vivitar cut-sheet feeders attach in seconds and feed up to 200 sheets of paper. Variable



The HP 7550A plotter features cut-sheet media feed.

Product descriptions contained in this section are based on information supplied to us by the respective manufacturers. These announcements are provided solely as a service to our readers and do not constitute an endorsement by inCider of any given product.

APPLEWARE, INC.

The Apple Users Group* Software Library

For the first time enjoy your Apple to its fullest capacity, using specially packed disks with over 60 outstanding programs each. [not available from any other source]

Each packed disk includes an extensive variety of interesting, useful and entertaining programs indispensable to all computerists! Mixed category packed disks include:

BUSINESS • EDUCATIONAL • DATA BASE • GAMES • UTILITIES • SCIENCE • MUSIC • GRAPHICS • FINANCE

Library Disks I, II and III are mixed categories. Single category disks are: **GAMES • UTILITIES • GRAPHICS • INTEGER • SCIENCE • TECH • MUSIC & AUDIO**

Individual disks available at \$59.95 each.

Order direct from this ad and Save up to \$150. Buy Library Disks I, II and III and get a special bonus disk FREE - over 260 programs for \$179.95 + \$4. shipping, BUT for the Best Value, receive any 9 disks featuring over 600 of our best programs for only 65¢ each for a package price of \$389. Certified Postage plus handling paid!

***Send one-time membership fee of \$15. (no fee charged to institutions) for 1000 + program catalog and gain access to a library of over 10,000 programs at a special 15% discount (Foreign memberships \$28. U.S.)**

For Orders Only Call now
TOLL FREE: 1-800-327-8664
Florida: 1-305-987-8665

Or Write:
Appleware, Inc.
6400 Hayes Street
Hollywood, Fla. 33024

Program Disks compatible with Apple II, II +, IIe, III Emul., Franklin Ace and IBM Quad

PROGRAMS 65¢ EACH

MasterCard

VISA

LISTEN to
"The Voice of Experience"

SynPhonix T.M.

Electronic Speech Articulator for the Apple!

Hear at last, hardware synthesis at software prices. **SynPhonix**™ produces unparalleled voice quality using the **all new SSI263** phoneme synthesizer with 64 phonemes, 100's of allophones, plus software controlled pitch, amplitude, rate and filter. The **SONIX™ 65©** Speech Operating System puts you in control of it all. **SynPhonix**™ is brought to you by professionals with more than a decade of experience in speech synthesis products. Applications are abundant. **SynPhonix**™ features include:

- SSI263 Phoneme Synthesizer
- Unlimited vocabulary
- High Quality Phonetic Voice
- Low Data Rate
- Singing/Sound Effects
- Comprehensive User's Manual
- Demo Software Included
- Free Spelling Program
- Transparent to User's Software
- SONIX™ 65©
 - Speech Operating System
 - Speech Editor
 - Preprogrammed Vocabulary
 - Vocabulary File Manager
 - EASY TO USE
- 90 Day Limited Warranty
- Suggested Retail \$125.00

Artic Technologies

2234 Star Ct.-2A (313) 852-8344
Auburn Heights, Michigan 48057

"The Voice of Experience"

Dealer inquiries welcome!

Apple is a Trademark of Apple Computer, Inc.

New DAVID-DOS II™ Compared With Other DOS's

Now you can speedup Text-file handling two ways

DAVID-DOS II is a new edition of DAVID-DOS with added speed, commands, and features. New Read, Write and Save routines are high speed. DAVID-DOS II updates full disks like Apple's Master Create. (The programs on your disks are not touched). DAVID-DOS II Inits blank disks with Basic, Binary or Exec HELLO in seconds. Ten new commands operate identical to existing DOS commands. Use them from the keyboard or in Basic programs. They accept A & L parameters.

Ten New DOS Commands

1. **TLOAD** speed loads all Text Files, random or sequential, to ram.
2. **TSAVE** speed saves all Text Files, random or sequential, from ram.
3. **TLIST** Lists all Text Files, random or sequential to screen/printer.
4. **DUMP** Memory to screen/printer in Hex with Ascii on right side.
5. **DISA** disassembles Binary to screen or printer.
6. **AL** prints last loaded program Address & Length in decimal & hex.
7. **HIDOS** moves DOS to Language Card & continues operation of program.
8. / is a one keystroke Catalog in addition to the original command.
9. **DATE** prints with any clock. Also File Dating with clock or manual.
10. **FIND** prints address's of hex found in 64k memory. Hidios cmd only.

Compatible

All DOS entry addresses have been preserved. DOS is original length and compatible with most software. David-Dos II is copyable and creates fully copyable updated disks. DAVID-DOS II is licensed by programmers for inclusion in the software they sell. Init areas were used for David-Dos II. Works with all Apple IIs including IIe 80 Col, Franklin & Hard Disks, such as Corvus & Xebec. Requires 48K. Complete documentation for screen or printing and many utilities are on the disk.

DAVID DATA

12021 WILSHIRE BLVD., SUITE 212G
LOS ANGELES, CA 90025 (213) 478-7865

All times in seconds. (Time Test programs available)		DAVID DOS-II	ProDOS	DIVERSI DOS	DOS 3.3
TEXTFILES (100 Sectors) (791 Strings, 32 chars ea) (442 Sectors, 7 x 500)	TSAVE	8.0	NO	NO	NO
	TLOAD	6.2	NO	NO	NO
	WRITE	29.3	28.0	29.4	88.4
	READ	24.3	16.3	24.3	83.8
	PRINT/READ	44.2	45.9	45.1	117.1
	APPEND	142.3	142.9	151.1	1231.2
APPLESOFT (100 Sectors)	*SAVE	7.1	16.4	6.4	33.1
	LOAD	5.0	4.0	5.0	23.5
INTEGER (100 Sectors)	*SAVE	7.3	NO	6.6	33.4
	LOAD	4.9	NO	4.9	23.4
BINARY (100 Sectors)	*BSAVE	7.8	18.4	7.3	28.7
	BLOAD	5.8	4.8	5.8	24.5
48K PROGRAM SPACE (With 3 Bufs avail)	APPLESOFT	36,352	NO	36,352	36,352
	INTEGER	36,352	NO	36,352	36,352
	BINARY	36,352	34,816	36,352	36,352
64K PROGRAM SPACE (With 5 Bufs avail)	APPLESOFT	46,592	31,232	45,658	35,162
	INTEGER	46,592	NO	35,162	35,162
	BINARY	46,592	40,704	45,658	35,162
NUMBER OF DOS COMMANDS		37	29	31	28
CLOCK FILE DATING		YES	YES	NO	NO
MANUAL FILE DATING		YES	NO	NO	NO
ONE KEYSTROKE CATALOG		YES	NO	YES	NO
AUTO USE INTEGER CARD ANY SLOT		YES	NO	NO	NO

Each Program was tested twice W/Apple Clock Card on a newly formatted disk containing DOS.

*Add 5 seconds for Verify. Apple II, Applesoft & ProDOS are trademarks of Apple Computer

To Order: Send Check or Phone Visa/MasterCard.

Add \$2.00 Shipping. Overseas add US \$4.00

Calif. add 6%. All orders airmailed.

\$39.95

MOVING?

Let us know 8 weeks in advance so that you won't miss a single issue of *inCider*. Attach old label where indicated and print new address in space provided. Also include your mailing label whenever you write concerning your subscription. It helps us serve you promptly. Write to:



Subscription Department
PO Box 911
Farmingdale, NY 11737

Extend my subscription one additional year for only \$24.97

☐ Payment enclosed ☐ Bill Me

Canada and Mexico \$27.97 one year only US Funds. Foreign Surface \$44.97 one year only US funds, drawn on US banks. Foreign air mail, please inquire.

If you have no label handy, print OLD address here.

Please allow 6-8 weeks for delivery.

Name _____

Address _____

City _____ State _____ Zip _____

print new address here:

Name _____

Address _____

City _____ State _____ Zip _____

Subscription Dept. • PO Box 911 • Farmingdale, NY 11737

AFFIX LABEL

ATTENTION subscribers!

We occasionally make our mailing list available to other companies or organizations with products or services which we feel might be of interest to you. If you prefer that your name be deleted from such a list, please fill out the coupon below or affix a copy of your mailing label and mail it to:

**The Wayne Green
Publications Group**
inCider
PO Box 911
Farmingdale, NY 11737

Please delete my name from mailing lists sent to other companies or organizations.

name _____

address _____

city _____ state _____ zip _____

New Products



A cut-sheet feeder from Vivitar.

paper positioning from 7-14 inches allows printing in either landscape or portrait mode. Ribbons and print-wheels can be changed without removal of the sheet feeder. Contact Vivitar Computer Products Inc., PO Box C-96975, Bellevue, WA 98009, for further information. Reader Service number is 483.

priced at \$495. This fully portable printer has 150 cps speed, 11 by 12 dot-matrix characters, multiple print sizes, bold and underline, tractor and friction paper feed, full graphics capability, and support for 11 other languages. Inquiries can be directed to Hewlett-Packard Co., 1820 Embarcadero Road, Palo Alto, CA 94303. Reader Service number is 484.

Quiet Printing

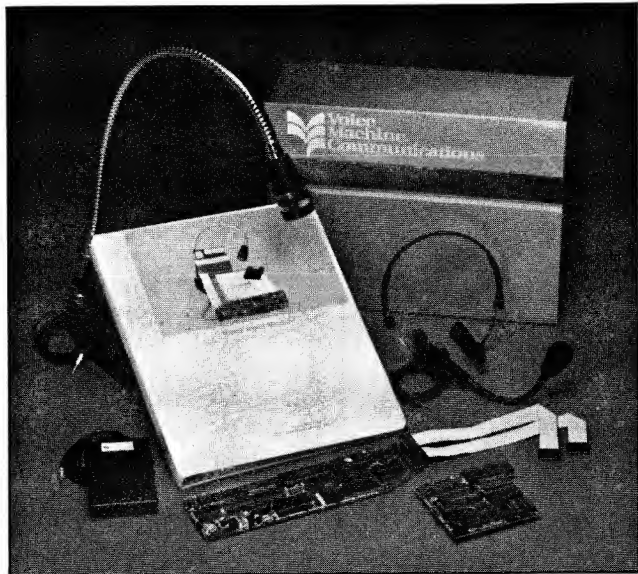
The ThinkJet ink-jet printer operates quietly (below 50 decibels) and is

Talk to Your Apple

IntroVoice II, a new speech input device, has a



ThinkJet printer operates quietly.

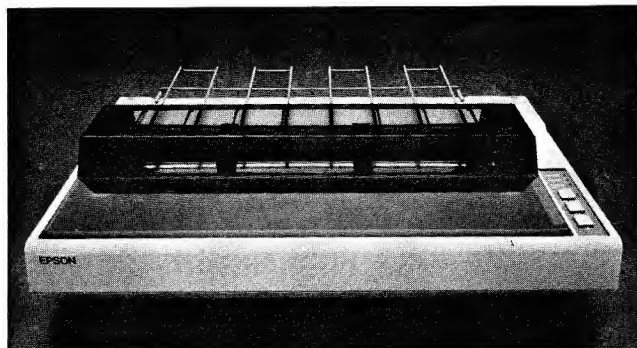


IntroVoice II—speech input device.

plug-in board with microphone and support software. Commands and data are input by voice or in combination with the keyboard. The IntroVoice II hardware and software together (\$1195) supports unlimited vocabulary in subsets of 160 words or phrases. The plug-in board contains a 16 channel audio spectrum analyzer, 16K RAM and 8K ROM. Contact Voice Machine Communications Inc., 1000 South Grand Ave., Santa Ana, CA 92705, for further information. Reader Service number is 485.

Epson 136-Column Printer

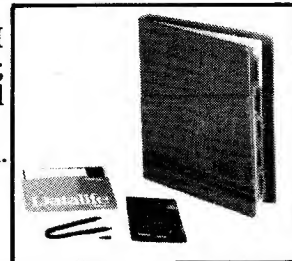
A low-cost (\$699) dot-matrix printer with print speed of 100 cps across 136 columns has been introduced by Epson America, 23844 Hawthorne Blvd., Torrance, CA 90505. The RX-100 features 9 × 9 dot matrix characters with a logic-seeking bi-directional printer, disposable print head, a 96-character standard ASCII character set and an alternative italics set, dot-addressable graphics modes ranging from 60–240 dots per inch and a



Epson's RX-100 dot matrix printer has a speed of 100 cps.

— REPAIR YOUR APPLE — A SPARE PARTS KIT FOR THE APPLE II AND II+

The Apple II is no longer in production and the need for spare parts, diagnostic routines and service support is increasing rapidly. Included in the kit are: one of each Integrated Circuit (minus the ROM's, CPU, and Character Generator ROM); Integrated Circuit Specifications; Enlarged Apple Schematics; Diagnostic Routines for RAM, ROM and I/O Board ROM's; Disk Diagnostics and Speed Tests and Miscellaneous information.



KIT PRICE
\$104.95

VISA/MASTERCARD and COD orders accepted. Shipping and COD charges are extra and Virginia residents add 4% tax. Your account is not charged until the day we ship.

CALL TOLL FREE....1-800-368-6502
IN VIRGINIA CALL (804) 595-0866

HOLMES ENTERPRISES, INC.
12361-C WARWICK BLVD.
NEWPORT NEWS, VA. 23606

Apple is a trademark of Apple Computer, Inc.

Circle 316 on Reader Service card.

SPECIAL ORDER

...for Special Needs.
Quality • Service • Professional

- **Medical & Dental Systems** from \$249.95 to \$1,695.95 for Apple //, IBM, MS-DOS.
- **Educator Administrative Packages** Scheduling, Grading, Attendance
- **Construction and Job Cost** Accounting Systems
- **Office Automation** Integrated Applications with Networking Possible.

For further information contact your local dealer
or call **(619) 365-9718**



MICRO COMPUTER DIVISION
55722 SANTA FE TRAIL
Yucca Valley, Ca. 92284

CIRCUIT DESIGN MADE EASY

Use your microcomputer and *Programs for Electronic Circuit Design* to help you select the correct value for each component in an electronic circuit. The programs are adaptable to most microcomputer systems and are also available on disk for the Apple, IBM PC and TRS-80. The thirteen programs can be used individually, or they can be combined, using a master menu, as explained in the book.

Topics covered include:

- resistor, capacitor and inductor circuits
- circuits that have combinations of resistors, capacitors and inductors
- series and parallel circuits
- voltage dividers
- impedance and frequency
- phase angles
- operational amplifiers
- transistor circuits

Programs for Electronic Circuit Design

David Leithauser

\$14.95 ISBN 0-88006-068-9

softcover 7 by 9 approx. 100 pp. 1984 BK7400

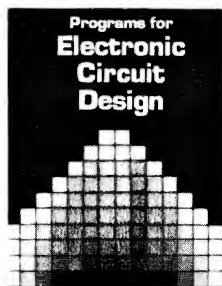
Book and Disk Packages \$24.97

Apple II, II+, IIe CC740011, ISBN 0-88006-079-4

IBM PC CC740012, ISBN 0-88006-080-8

TRS-80 Model I/III CC740013, ISBN 0-88006-081-6

To order, call toll-free 1-800-258-5473 for credit card orders. Or mail your order with check or money order or complete credit card information to: Wayne Green Books, Retail Sales, Peterborough, NH 03458. Please include \$1.50 for the first item and \$1.00 for each additional item for shipping and handling. Wayne Green Books are also available in book stores. Orders are payable in U.S. dollars only. Please allow 4-6 weeks for delivery. Dealer inquiries invited.



Send me _____ copies of *Programs for Electronic Circuit Design* (BK7400) at \$14.95 each. Send me _____ packages for the Apple II, II Plus, IIe (CC740011); _____ packages for the IBM PC (CC740012); _____ packages for the TRS-80 Model I/Model III (CC740013) at \$24.97 each. Shipping and handling is \$1.50 for the first item; \$1.00 for each additional item.

Card # _____ Expiration date _____

☐ payment enclosed ☐ MasterCard ☐ Visa ☐ Am. Ex.

Signature _____

Name _____

Address _____

City _____ State _____ Zip _____

Wayne Green Books, Peterborough, NH 03458

346B5P

New Products



SuperCable cables.



SuperCord II interface.

half-speed quiet mode. Reader Service number is 473.

SuperCable

Cord Ltd. has a SuperCable line with RS-232C and IEEE-488 interfaces and cables for all popular brands of printers ranging from \$39.95 to \$49.95. The SuperCord II Interface (\$369) enables an ordinary electronic typewriter to become a printer for computers. It contains a 4K memory buffer, and can be used with the Adler, Brother, Royal, Smith Corona, Silver-Reed and other electronic typewriters. Contact

Cord Ltd. at 1548 Brookhollow Drive, Santa Ana, CA 92705, for further information. Reader Service number is 481.

Put Your Apple Under Lock and Key

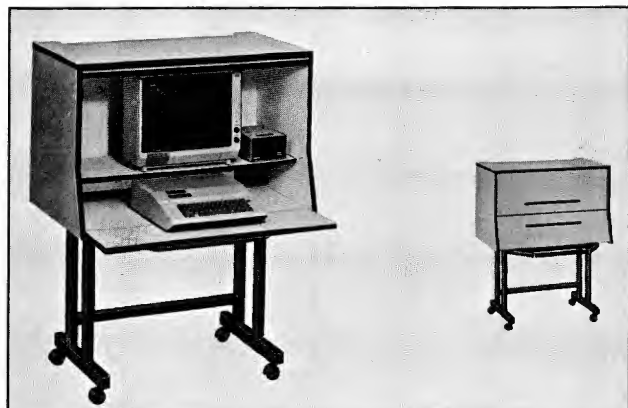
The Maximums, a line of lockable workstations, house and protect hardware and software and provide an efficient working environment.

Models include the Big Max (\$475) and Little Max (\$375) that secure keyboards, monitors, disk drives and software under lock and key to prevent theft, damage or unauthorized use. Durable built of 3/4-inch wood with wear-resistant work surfaces and tubular steel frame construction, the units are available with or without locking casters for smooth safe transport.

Contact Hubbard Scientific Co., 1946 Raymond Drive, Northbrook, IL 60062, for further information. Reader Service number is 480.

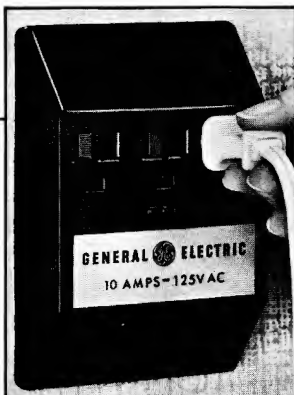
Convenient Terminal Table

The MTT-1 terminal ta-



Big Max computer workstation.

ble (\$172) provides both a stable work table for terminal use and a convenient way of moving computer terminals. The table has a heavy-duty cast-aluminum 5-legged base with locking casters and a chrome pedestal bolted directly to the work surface. For more information, contact Bretford Manufacturing Inc., 9715 Soreng Ave., Schiller Park, IL 60176. Reader Service number is 486.



GE's GESP-753 voltage surge suppressor and noise filter.

Co., 316 East 9th St., Owensboro, KY 42301. Reader Service number is 475.

Spike Protector

A voltage spike protector has been introduced with built-in noise filtering capabilities to protect computers and other electronic equipment. The GESP-753 has a suggested list price of \$48.75. For more information, contact the Microwave Products Department, General Electric

Let Your Apple Do the Talking

Apple Computer announced two modems, a 300-baud model and a 1200-baud model, that are fully compatible with all Apple computers. The new modems are command-compatible with Hayes SmartModems and work with a variety of communi-



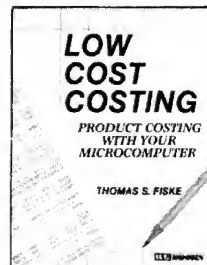
MTT-1 terminal table.

CONTROL YOUR COSTS AND MAXIMIZE YOUR PROFIT

To make a profit, you have to know what your costs are. *Low Cost Costing* is a book-and-software combination that will help you determine production costs for your small business, using your Apple, IBM PC, or TRS-80.

If you are responsible for production, you can increase your profits once you know what you're spending. *Low Cost Costing* shows you how to analyze your costs using your profit-and-loss statements and your microcomputer. Once you've found them, you can:

- Cut your costs.
- Adjust prices.
- Set marketing and manufacturing strategies.
- Determine why some products sell and others don't.



It's the time- and money-saving combination your small business needs—*Low Cost Costing* and your micro.

Low Cost Costing

Thomas S. Fiske
approx. 112 pp.
\$24.97

Apple II, II Plus, IIe
CC7399 (package)
ISBN 0-88006-067-0

TRS-80 Model I, III
CC7403 (package)
ISBN 0-88006-072-7

IBM PC
CC7402 (package)
ISBN 0-88006-071-9

To order, call toll-free 1-800-258-5473 for credit card orders. Or mail your order with check or money order or complete credit card information to: Wayne Green Books, Retail Sales, Peterborough, NH 03458. Please include shipping and handling of \$1.50 for the first system, \$1.00 for each additional system. Orders payable in US dollars only. Please allow 4-6 weeks for delivery.

Yes, I want *Low Cost Costing*. \$24.97 per system, plus shipping and handling (\$1.50 for the first system, \$1.00 for each additional system). Please indicate total number wanted for each system.

___ Apple (CC7399) ___ IBM PC (CC7402) ___ TRS-80 (CC7403)

☐ payment enclosed ☐ MasterCard ☐ Visa ☐ Am. Ex.

Card # _____ MC bank # _____

Expiration date _____ Signature _____

Name _____

Address _____

City _____ State _____ Zip _____

Wayne Green Books, Peterborough, NH 03458

346B4L

Have you placed your vote for *inCider's* best advertisement of the month?

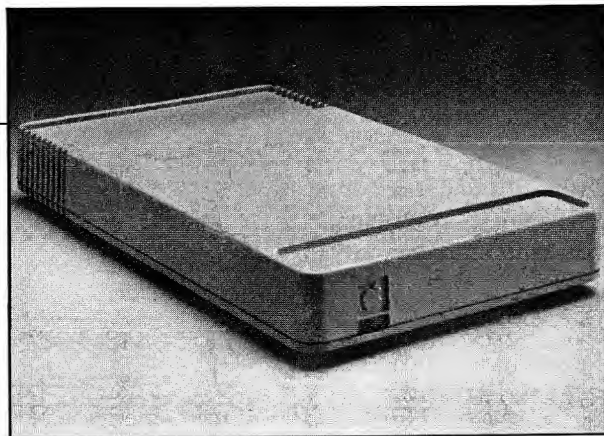
To do so, simply turn to the reader service card and fill in the company name and reader service number.



Reader Service

TO RECEIVE MORE INFORMATION ON THE PRODUCTS AND SERVICES ADVERTISED IN THIS ISSUE, PLEASE TURN TO READER SERVICE CARD.

New Products



Apple Computer introduces two modems.

cation software packages on the market, including ASCII Express, Data Capture, Access III, VisiTerm, Z-Term and Transcend 1, 2, 3. Both modems provide built-in auto-dial and auto-answer functions to receive messages and to transmit information. An RS-232C serial interface card is required to connect these to an Apple II; the modems plug directly into an Apple III, Lisa, or Macintosh.

The suggested retail price is \$225 for the Apple Modem 300 or \$299 with the optional accessory kit that includes the serial interface card and terminal program. The cost for the Apple Modem 1200 is \$495 or \$570 with the optional accessory kit containing the card and terminal program. For further information, contact Apple Com-

puter, 20525 Mariani Ave., Cupertino, CA 95014. Reader Service number is 472.

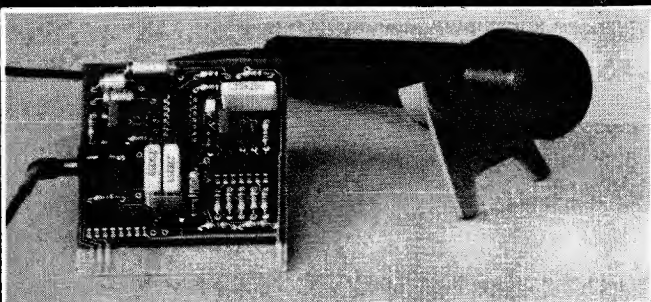
Keyboards for the Handicapped

Key Tronic Corp. has introduced handicapped-operable replacement keyboards for Apple II personal computers. Individuals not having the use of two hands can now operate the Apple using the Apple KB200 for \$298. With the alternate action switches on shift and control keys, only one key has to be depressed. Key Tronic's mouse (\$230) should also help the handicapped eliminate computer-operation barriers. For more information, contact Key Tronic Corp., PO Box 14687, Spokane, WA 99214. Reader Service number is 487.



KB200 keyboard for the handicapped.

NEW! TALK TO YOUR APPLE



VOICE INPUT THAT WORKS. \$199

Imagine being able to enter data and commands into your Apple by talking to it! Up until now, speech recognition peripherals were either too expensive or did not work well enough to be useful. The Microsignal SR-32 speech recognizer is changing all that. First it is priced reasonably at \$199. Second, it works. Performance is equal or better to units costing thousands of dollars. Third, it is easy to use.

Your vocabulary can have up to 32 words (or short phrases) of your choice. More are possible by paging two or more vocabularies. You train the SR-32 to your voice by saying each word in the vocabulary three times. That's all. Then, by using our PARKEY program you can enter data by either talking or typing. The Apple wouldn't know the difference. Or you can add voice input to your programs—a line of BASIC is all that is needed to recognize a word. Vocabularies can be saved on disk and recalled when needed.

Use your SR-32 to enter data to your spreadsheet. Or to control your word processor. Or just for fun and games. Or you may want to experiment with robotics. And there must be many creative ways to use voice input nobody has thought of yet.

The SR-32 comes complete with hardware that plugs into a slot of your Apple II+ (48K) or IIe, microphone, diskette with software and user manual. And it has a one year warranty against manufacturing defects.

To order the SR-32 send us a check for \$199. We pay shipping in the US. Foreign orders welcome, add \$20 for shipping.

microsignal

Dept. G, P.O. BOX 22
MILLWOOD, NY 10546

YOU MISSED IT!

But you still need that issue of inCider. Well, it's not too late to get it.

Send for your free Back Issue Catalog.

A complete listing, including editorial highlights.

You still need it.

And we've still got it.

YES, I want my free Back Issue Catalog for inCider.

Name _____

Address _____

City _____ State _____ Zip _____

inCider, Mail Order, 80 Pine St.,
Peterborough, NH 03458.

What would you do with 1,000,000 customers?

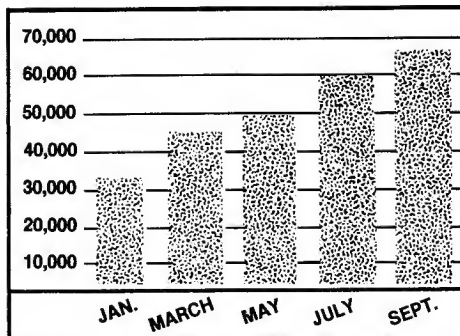


Sell inCider and you'll tap into a tremendous market. Over one million Apple* computers have been sold so far. And every Apple owner is looking for the kind of practical help inCider provides.

Of course, you won't see all of those one million customers in your store. But those that do come in are likely to become regular customers.

The type of customers you can always use more of. Our average reader is 34 years old, college educated, and earns about \$43,200 a year.

Look at the graph to see how your sales may improve.



In the last nine months, inCider's newsstand sales have nearly doubled.

*Apple is a registered trademark of Apple Computer Inc.

Selling inCider is easy to do. We offer:

- liberal dealer discounts
- six-month, full-refund returns
- a toll free number for assistance
- a colorful poster to spur sales

Call Ginnie Boudrieau, our Retail Sales Manager, to place your order today!

1 (800) 343-0728

In NH call (603) 924-9471

Or write to her at: inCider, 80 Pine Street, Peterborough, NH 03458.

Sell inCider.

Reader Service	Page No.	Reader Service	Page No.	Reader Service	Page No.
501 Abacus/CompuSource	37	473 Epson America	157	186 Prentice Hall Inc.	21
26 Action-Research Northwest	133	339 Exec Software Inc.	131	437 Prestidigital Software	136
168 Addmaster Corp.	139	318 Fastrack Computer Products	117	49 Prof. Jones/Frogg House	40
459 Advanced Data Institute	151	161 Fiberbilt	147	521 Programs Plus	55
463 Advanced Ideas	148	139 Flexible Software	95	268 Prometheus Products	14
462 Adventure International	149	49 Frogg House/Prof. Jones	40	274 Protecto Enterprizes	86, 87
* Alco Computing Inc.	145	475 General Electric Co.	159	16 Quinsept Inc.	126
474 Analytical Engines Inc.	154	146 Golem Computers	128	519 Quorum	93
472 Apple Computer	159	66 H & E Computronics	CIII	* RCM Software	152
479 Apple Computer	154	427 HARDCORE Computist	80	309 Rising Sun Software	144
24 Appleware Inc.	155	470 Hewlett Packard	154	250 Roger Wagner Publishing, Inc.	73
* Applied Engineering	61, 121	484 Hewlett Packard	156	140 Rule One	137
57 Artic Technologies Inc.	155	405 Hollywood Hardware	75	RUN Magazine	98
450 ARTSCI	146	398 Holmes Enterprises Inc.	157	* Safeware	109
137 Atari Software	35	455 Howard W. Sams & Co. Inc.	146	223 Sav-soft Products	141
327 BASF	25	480 Hubbard Scientific Co.	158	85 Scooter/ohm Electronics	45
179 Beagle Bros Microsoft	70, 71	263 Human Systems Dynamics	16	526 Select Software Inc.	115
* Beck Manufacturing	49	304 Human Systems Dynamics	89	* Sensible Software	83
35 Bible Research Systems	101	419 Human Systems Dynamics	92	218 Sir-Tech	41
350 Bill Cole Enterprises Inc.	12	33 Immac	130	460 Society for Visual Education Inc.	150
344 Bill Cole Enterprises Inc.	56	inCider		464 Soft Path Systems	153
452 Bluebush Inc.	148	Dealer Sell	161	266 Softronics	50
* Bottom Line	57	Foreign Dealer	126	118 Software Masters	149
486 Bretford Manufacturing Inc.	158	Manuscript	156	376 Software Unlimited	140
* Business Computers		Moving	156	103 Southern Center for Res. Inn.	137
of Peterborough	99	Subscriptions	34	454 Southwest EdPsych Services	146
284 Byte General Inc., The	127	Subscription Problems	138	303 Spinnaker Software Corp.	CII, 3
6 Bytes & Pieces	79	University Micro	138	193 Star Micronics	9
428 Cal-Abco	129	469 Intelligent Software Inc.	151	67 Stellation Two	139, 136
* Caribbean Computer Sales	114	12 Interactive Microware	153	82 Strictly Software	63
469 Center for Science in Public Interest	150	451 J & J Software	149	156 Sublogic Communications Corp.	52
467 Centropoint Computer Applications	151	162 J & M Software	150	517 Such-A-Deal	107
361 Central Point Software	76	jr Subscriptions	66	8 Sun Research Inc.	132
40 Check-Mate	90	62 Kalglo Electronics Co. Inc.	152	525 Swenson Assoc. Inc.	64
316 CMA/Microcomputer	157	216 Kemcore Company	84	10 Synetix Micro Products	23
254 Computer Outlet	67	86 Kensington Microware	27	453 Syntauri	151
* Computer Plus	150	511 Key Tronic Corp.	11	25 Texprint	135
434 Computer Technology Assoc.	137	487 Key Tronic Corp.	160	32 Thirdware	91
481 Cord Ltd.	158	315 Koala Technologies Inc.	7	471 3M	154
163 Core Concepts	147	306 Locus Systems	151	278 Titan Technologies	81
458 CZ Software	146	356 Mega-Byte	136	461 Transend Corp.	149
332 David Data	155	208 Micro City/Pace	79	15 Troy Software Designs	100
465 Davka Corp.	148	352 Micro Design	19	264 Utilico Software	111
457 Daybreak Software	148	245 Micro Management Systems	97	182 Videx Inc.	20
3 Dennison Computer Supplies	CIV	523 Micro Minds Unlimited	140	483 Vivitar	154
367 Digital Images	143	360 Micro Program Designs	117	485 Voice Machine Communications Inc.	157
* Diskette Connection	95	466 Micro Program Designs	146	Wayne Green Enterprises	
108 Diversified Software Research	147	513 Micro Signal	161	Digital Audio	73
247 Dorsett Educational Systems	18	204 Micro Works	153	Wayne Green Inc.	
30 Dow Jones News Retrieval	78	380 Nibble Notch	151	110 Low Cost Costing	159
530 Dune Assoc.	139	310 Northeastern Software	39	110 Prog. Circuit Design	158
362 Eastcoast Software	47	85 ohm Electronics/Scooter	45	* Manuscript	161
482 Eddie Goodwin Co.	154	208 Pace/Micro City	79	110 Book Page	152
456 Educational Activities Inc.	150	31 Pacific Exchanges	143	512 Witts End	141
313 Effective Solutions	136	244 Peripheral Visions Inc.	85	* XPS, Inc.	148
404 Elek-Tek	82	141 Pirate Harbor	134		

*This advertiser prefers to be contacted directly. For further information from our advertisers, please use the Reader Service card.

Introducing the Most Powerful Business Software Ever!

TRS-80™ (Model I, II, III, or 16) • APPLE™ • IBM™ • OSBORNE™ • CP/M™ • XEROX™



The VERSABUSINESS™ Series

Each VERSABUSINESS module can be purchased and used independently, or can be linked in any combination to form a complete, coordinated business system.

VERSARECEIVABLES™ \$99.95

VERSARECEIVABLES™ is a complete menu-driven accounts receivable, invoicing, and monthly statement-generating system. It keeps track of all information related to who owes you or your company money, and can provide automatic billing for past due accounts. VERSARECEIVABLES™ prints all necessary statements, invoices, and summary reports and can be linked with VERSALEDGER II™ and VERSAINVENTORY™.

VERSAPAYABLES™ \$99.95

VERSAPAYABLES™ is designed to keep track of current and aged payables, keeping you in touch with all information regarding how much money your company owes, and to whom. VERSAPAYABLES™ maintains a complete record on each vendor, prints checks, check registers, vouchers, transaction reports, aged payables reports, vendor reports, and more. With VERSAPAYABLES™, you can even let your computer automatically select which vouchers are to be paid.

VERSAPAYROLL™ \$99.95

VERSAPAYROLL™ is a powerful and sophisticated, but easy to use payroll system that keeps track of all government-required payroll information. Complete employee records are maintained, and all necessary payroll calculations are performed automatically, with totals displayed on screen for operator approval. A payroll can be run totally, automatically, or the operator can intervene to prevent a check from being printed, or to alter information or it. If desired, totals may be posted to the VERSALEDGER II™ system.

VERSAINVENTORY™ \$99.95

VERSAINVENTORY™ is a complete inventory control system that gives you instant access to data on any item. VERSAINVENTORY™ keeps track of all information related to what items are in stock, out of stock, on backorder, etc., stores sales and pricing data, alerts you when an item falls below a preset reorder point, and allows you to enter and print invoices directly or to link with the VERSARECEIVABLES™ system. VERSAINVENTORY™ prints all needed inventory listings, reports of items below reorder point, inventory value reports, period and year-to-date sales reports, price lists, inventory checklists, etc.

VERSALEDGER II™ \$149.95

VERSALEDGER II™ is a complete accounting system that grows as your business grows. VERSALEDGER II™ can be used as a simple personal checkbook register, expanded to a small business bookkeeping system or developed into a large corporate general ledger system **without any additional software.**

- VERSALEDGER II™ gives you almost unlimited storage capacity (300 to 10,000 entries per month, depending on the system),
- stores all check and general ledger information forever,
- prints tractor-feed checks,
- handles multiple checkbooks and general ledgers,
- prints 17 customized accounting reports including check registers, balance sheets, income statements, transaction reports, account listings, etc.

VERSALEDGER II™ comes with a professionally-written 160 page manual designed for first-time users. The VERSALEDGER II™ manual will help you become quickly familiar with VERSALEDGER II™, using complete sample data files supplied on diskette and more than 50 pages of sample printouts.

SATISFACTION GUARANTEED!

Every VERSABUSINESS™ module is guaranteed to outperform all other competitive systems, and at a fraction of their cost. If you are not satisfied with any VERSABUSINESS™ module, you may return it within 30 days for a refund. Manuals for any VERSABUSINESS™ module may be purchased for \$25 each, credited toward a later purchase of that module.

To Order:

Write or call Toll-free (800) 431-2818
(N.Y.S. residents call 914-425-1535)

- * add \$3 for shipping in UPS areas
- * add \$4 for C.O.D. or non-UPS areas

- * add \$5 to CANADA or MEXICO
- * add proper postage elsewhere

DEALER INQUIRIES WELCOME

All prices and specifications subject to change / Delivery subject to availability.

COMPUTRONICS

50 N. PASCACK ROAD, SPRING VALLEY, N.Y. 10977

* TRS-80 is a trademark of the Radio Shack Division of Tandy Corp. • *APPLE is a trademark of Apple Corp. • *IBM is a trademark of IBM Corp. • *OSBORNE is a trademark of Osborne Corp.
Circle 66 on Reader Service card. • *CP/M is a trademark of Digital Research • *XEROX is a trademark of Xerox Corp.

ENTER THE ELEPHANT SAFARI SWEEPSTAKES.

Circle 3 on Reader Service card.

GRAND PRIZE (1 winner)



An exciting two week adventure for two to a wild game preserve in Kenya, Africa. The trip includes airfare, luxurious accommodations, meals, tips, and taxes.



SECOND PRIZE

(25 winners)

A Bell & Howell 35mm camera. The 35J complete with fine Lumina lens completely eliminates complicated focusing.

FIRST PRIZE

(5 winners)

A Deluxe Camping Package featuring an 8' x 10' Wenzel Cabin Tent, four Wenzel sleeping bags, plus a Coleman lantern, stove and cooler.



HOW TO ENTER

No purchase necessary. Just come into a participating Elephant Safari Sweepstakes dealership where you'll find free entry blanks and official rules. While you're there, check out our full line of quality Elephant memory disks and accompanying products. Entries must be received by July 31, 1984. Void where prohibited.

Dennison

For the Elephant dealer nearest you, call 1-800-343-8413. In Massachusetts, call collect 617-769-8150.



ELEPHANT NEVER FORGETS

THIRD PRIZE

(100 winners)

Camouflage Nylon Duffle Bag. This handsome bag is water repellent and double reinforced at all stress points.

And thousands of Elephant Safari camouflage T-shirts featuring the Elephant logo.

